RACIAL VARIATIONS IN CAREGIVER STRESS AND BURDEN AMONG INFORMAL CAREGIVERS OF IMPAIRED ELDERLY PERSONS

By

GLORIA JANICE ALLEN

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To Thea Christina,

my beautiful, amazing and loving daughter

who has brought the absolute greatest joy into my life.

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Always first and foremost in my life, I thank God for blessing me so abundantly and giving me the strength to persevere despite seemingly insurmountable odds in the personal and professional spheres of my life. I know there is a God who watches over me.

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Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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By

Gloria Janice Allen

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Cochairperson: Lee A. Crandall
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Research in social gerontology indicates the population of elderly persons having functional and cognitive impairments is projected to more than double between 1990 and 2030, from 6.2 to 13.8 million persons. An increasingly greater proportion of impaired black elders is also projected to be in need of assistance. Most research on caregiver stress and burden, as well as interventions to reduce them, has been conducted on samples composed primarily of white caregivers. Therefore, we need to determine whether factors that predict stress and burden are the same for both black and white caregivers in order to plan effective interventions enabling them to maintain their assistance.

This study compares by race the predictors of stress and burden among informal caregivers to impaired elders. Role theory and the concept of role strain are the theoretical

orientation and major premise, respectively, underlying the conceptualization of caregiver stress and caregiver burden.

The data are from the 1982 National Informal Caregivers Survey, a nationally representative sample of informal caregivers of impaired elderly persons. The total sample size is 1,789, of which 1,521 are whites and 268 are blacks.

Data analyses include descriptive statistics, bivariate analyses, multiple regression and logistic regression techniques. Findings suggest moderating effects of factors (other than race) explain differences in caregiver stress and negative financial changes observed between the two race groups. Race differences are observed in three of six dimensions of burden and in overall burden. However, in two dimensions of burden and overall burden race differences are explained by moderating effects of other factors.

CHAPTER ONE
INTRODUCTION

The purpose of this research is to compare by race the predictors of caregiver stress and burden among informal (i.e., unpaid) caregivers to impaired elderly persons. Over the past twenty years informal caregivers have been the subject of much research in social gerontology. However, most research on caregiver stress and burden, as well as interventions to relieve these negative experiences, has been conducted on samples composed primarily of white people. Therefore, interventions and policies to sustain the mental and physical health of caregivers to the elderly have been based on the experiences and needs representative of white people in America.

There are several reasons to examine caregiver stress and burden among the black population. First, like white elderly persons, black elderly persons more often receive home and personal care from their family and friends rather than through formal services (Mindel, Wright and Starret, 1986). Second, greater proportions of elderly black than white people living in the community were both disabled and in poor to fair health (Ries and Brown, 1991; Adams and Collins, 1987). Third, between 1980 and 1989 the population of elderly black people

increased proportionally more than the population of elderly white people (21.3 and 19.4 percent, respectively) (U.S. Bureau of the Census, 1991). The pattern of increasing growth of the elderly population, in general, and among black elders, in particular, is expected to continue (Angel and Hogan, 1991; Jackson, 1985). Finally, the population of impaired elderly is projected to more than double between 1990 and 2030, from 6.2 to 13.8 million persons (Zedlewski, Barnes, Burt, McBride, and Meyer, 1989). This is because the number of very old (age 85 and older) will grow more than the total elderly population, and more impairments are observed among the very old. Thus, we can expect an increasing proportion of impaired elderly black people who need assistance.

Racial differences have been observed among informal caregivers of the elderly. Although caregivers of both elderly blacks and whites are more often family and friends than providers of formal services, there is some evidence that blacks tend to receive even more help from informal caregivers than do whites (Mindel et al., 1986) and that the helping networks of elderly blacks are more diverse than those of whites (Ford, Haug, Jones, Roy and Folmar, 1990). Furthermore, a) black daughters expect to do more in the caregiving role than do their white counterparts; b) whereas conflict between caregiving duties and the daughters' personal and social lives is a common predictor of caregiver strain among both racial groups, its impact is greater among white

daughters than black daughters; and c) although a high prevalence of caregiver role strain is observed among both white and black daughters (91 and 88 percent, respectively), black daughters report significantly less caregiver role strain than white daughters (Mui, 1992).

Racial differences were also observed in the predictors of caregiver burden among a nonprobability sample of family caregivers. According to Morycz et al. (1987), the best predictors of burden among white family caregivers are that the elders a) are cognitively impaired (i.e., have dementia); b) are unable to perform instrumental activities of daily living (i.e., preparing meals, shopping, handling money, using the telephone); c) live alone; d) lack social support from formal and informal sources; and e) have sensory loss (i.e., vision, hearing, touch). Among black family caregivers the best predictors of burden are the elders a) are physically impaired and require assistance with activities of daily living (i.e., eating, bathing, dressing, toileting); b) fall and have difficulty walking (i.e., gait disorders); and c) are unmarried (Morycz et al., 1987).

Since racial differences have been observed in caregiver stress and caregiver burden among these segments (i.e., adult daughters, family members) of the informal caregiver population, we need to determine whether the factors that influence caregiver stress and burden are the same for the population of black informal caregivers as for white ones.

After all, informal caregivers of the elderly include relatives and nonrelatives, household members and non-household members (Bureau of the Census, 1991), and as previously noted, racial differences exist in the composition of the helping networks of the elderly.

Furthermore, we need to determine if the factors that influence caregiver stress and burden are homogeneous by race; this will facilitate the planning of effective intervention strategies to enable black informal caregivers, as well as their white counterparts, to maintain their assistance. We also need to determine the extent to which stress and burden are experienced by black caregivers; planners will thus be cognizant of the inherent risks if germane interventions are not implemented. We need to identify the factors associated with caregiver stress and burden among black informal caregivers and whether the factors that predict stress and burden are the same for both black and white informal caregivers. Consequently, the following issues are addressed in this study:

- Is the amount of caregiver stress experienced different between black and white informal caregivers?
- Are the factors that predict caregiver stress different between black and white informal caregivers?
- Is the amount of caregiver burden experienced between black and white informal caregivers different?

- Are the factors that predict caregiver burden different between black and white informal caregivers?

These findings will contribute to existing research in three ways. First, relationships between factors that predict stress and burden among informal caregivers of a specific minority group (i.e., black caregivers) can be clarified. Next, whether the predictors of caregiver stress and burden among a minority group are homogeneous with the majority group can be determined. And last, useful information is gained for developing appropriate policies and practices to address the actual needs of black families, as well as white families, who are at risk for caregiver stress and burden.

The terms stress, strain, and burden have been used inconsistently in the caregiver literature. Some have used them interchangeably (Morycz, 1985; Wood and Parham, 1990). Others have made distinctions between stress and burden (Dwyer and Miller, 1990), strain and burden (Morycz et al., 1987), and strain and stress (Pearlin et al., 1989). Some have also made distinctions between burden as subjective and objective (Montgomery and Borgatta, 1989; Poulshock and Deimling, 1984; Montgomery, Gonyea and Hooyman, 1985) and as personal and interpersonal (Miller, McFall and Montgomery, 1991). In this study, stress, strain and burden are subjective concepts. Although they are interrelated phenomena, they are not interchangeable.

For the purposes of this study, stress is defined as the caregivers' belief that providing elder care taxes or exceeds their mental and emotional resources and endangers their mental well-being (Lazarus and Folkman, 1984). Hence, stress is psychological in nature.

Strain refers to role strain; it is defined as problems (i.e., hardships, challenges, and conflicts) caregivers experience as they interact with others in fulfilling a variety of institutionalized social role obligations (such as spouse, child, parent, employee, teacher, clergy, Christian) (Pearlin, 1983) in addition to that of caregiver. Strain results from individuals' expectations of their interactions with others with whom they have relationships due to their roles (for example, caregiver-care recipient, parent-child, teacher-pupil). Caregiver strain, therefore, includes problems exhibited by the elder because the elder's problems are part of the caregiver's role relationship with the elder.

Burden is defined as the accumulation of specific problems in caregivers' lives that they associate with providing elder care. Burden occurs in areas of the caregiver's life (i.e., mental status, physical status, social status, self-expectations). Thus burden is, precisely, the caregiver's problems and not problems demonstrated by the impaired elder. In this study, burden consists of the caregiver's perceptions that caring for an impaired person causes problems in the following six areas of the caregiver's

life: (a) negatively affects mental health, (b) negatively affects physical health, (c) limits participation in social activities, (d) negatively affects financial status, (e) requires giving elder care when the caregiver is not well enough, and (f) necessitates providing constant attention to the impaired elder (Zarit, Todd and Zarit, 1986; Miller, McFall and Montgomery, 1991). Therefore, burden is a multidimensional construct.

Controversy has surrounded the methodological issue of whether the most appropriate indicator of caregiver burden is global or dimension-specific. Some researchers support the use of a summated or global score because it indicates the accumulation of problems experienced (Zarit et al., 1980, 1986) and because the components of the dimensions are highly correlated (McFall and Miller, 1992). Others prefer dimension-specific measures for identifying antecedents or correlates of the various aspects of caregiver burden (George and Gwyther, 1986; Horowitz, 1985; Poulshock and Deimling, 1984; Miller, McFall and Montgomery, 1991) that could be applied to burden-reducing interventions (Kosberg et al., 1990). However, some researchers contend that the use of both global measures and dimension-specific measures is justified, depending on the research questions posed (Zarit, 1989) and whether the purpose is overall assessment of burden or application to specific interventions (Kosberg et al., 1990). In this study, both overall burden and dimension-specific

burden are examined because both the amount of burden experienced and the predictors of burden (for intervention strategies) are of interest.

CHAPTER TWO
BACKGROUND AND SIGNIFICANT LITERATURE

Caregiver Stress

Conceptual Framework

Pearlin, Turner and Semple's (1989) model of caregiver stress and coping in Figure 1 is utilized as a guide for the model of caregiver stress discussed in this study. According to Pearlin and colleagues, components of the caregiver role represent dimensions of caregiver strain (i.e., difficulties, challenges and problems that people come to experience as they engage over time in normal social roles). Role (e.g., caregiver role) strains are observed to be antecedents to stress (Pearlin and Lieberman, 1979).

Role theory (Goode, 1960a) and the concept of role strain (Pearlin, 1983; Goode, 1960b) are the theoretical orientation and major premise, respectively, underlying Pearlin and colleagues' model of caregiver stress and coping. According to Goode (1960a), all roles that an individual enacts or performs (i.e., child, spouse, parent, employee, Christian, etc.) contain elements that are institutionalized to various extents. Although disagreement can occur in any role relationship, conflicts can occur in fulfilling different

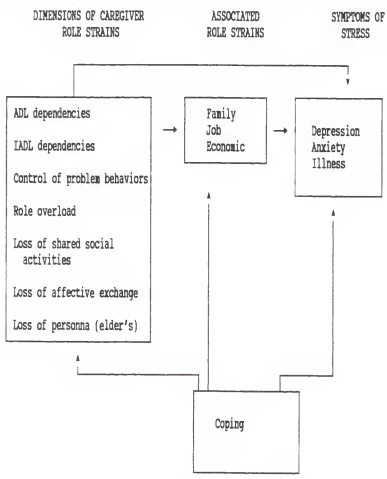

Figure 1. Major components of a Model of Caregiver Stress and Coping (Pearlin et al., 1989)

roles due to the number of roles, time constraints, and role obligations. The "felt difficulty in fulfilling role obligations" that emanates from individuals participating in their many different role relationships is defined as role strain (Goode 1960b, p. 483). Pearlin (1983) defines role strain similarly, but more specifically, as "hardships, challenges, and conflicts or other problems that people come to experience as they engage over time in normal social roles"

(p.8). Role strains, therefore, are considered as enduring and chronic in nature. Given that role strains are antecedents to stress (Pearlin and Lieberman, 1979), the chronic and enduring nature of role strains seems to indicate that the stress experienced will be persistent, also.

Model for Caregiver Stress

Figure 2 displays the modified version of the model of caregiver stress and coping (Pearlin et al., 1989) utilized in this study. Characteristics of the caregiver associated with stress are added to the original model based on Pearlin's (1989) later writings and subsequent work (Pearlin, Mullan, Semple and Skaff, 1990). Key characteristics (i.e., ascribed and achieved statuses) of the caregiver are posited to potentially influence almost everything we want to learn about caregiving and its effects because they signify where people stand within stratified orders having "unequal distributions of rewards, privileges, opportunities, and responsibilities" (Pearlin, 1989; Pearlin et al., 1990).

Moreover, the ascribed and achieved statuses of race (Kessler and Neighbors, 1986), gender (Simon, 1992; Aneshensel and Pearlin, 1987), and social class (Mirowsky and Ross, 1986; Kessler and Cleary, 1980; Neff, 1984) are associated with stress, its outcomes and manifestations. Stress, its outcomes (psychological distress, forms of mental illness) and its manifestations (symptoms and behaviors consistent with

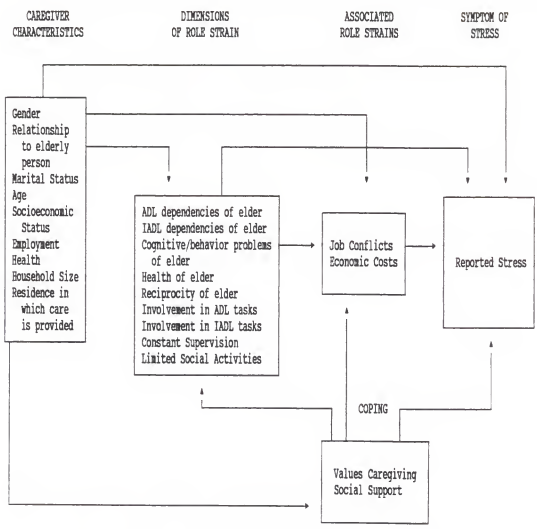

Figure 2. Model of Caregiver Stress
Adapted from Pearlin et al. (1989) Model of Caregiver Stress and Coping

psychological distress and forms of mental illness) are observed disproportionately more among Americans in the lower social class, females and blacks, as well as among some other minority groups. My subsequent review of the literature indicates that gender, age, marital status, residence, socioeconomic status, and race are sociodemographic

characteristics of the caregiver that are associated with caregiver stress.[1]

Pearlin (1989) points out that many stressful experiences can be traced back to surrounding social structures and people's locations within the structures. Hence, the origin and analysis of the stress process should begin with examining "the social arrangements of society and the structuring of experience within these arrangements" (Pearlin, 1989, p.242). According to Pearlin (1989):

> The most encompassing of these (social) structures are the various systems of stratification that cut across societies, such as those based on social and economic class, race and ethnicity, gender, and age. To the extent that these systems embody the unequal distribution of resources, opportunities, and self-regard, a low status within them may itself be a source of stressful life conditions. (p.242)

Therefore, according to this theoretical perspective, social locations considered lower statuses in American society tend to be associated with greater caregiver stress. In this study, social locations of caregivers are included in the caregiver characteristics component of the model. The social positions viewed as lower locations, by the dominant thought in mainstream American society, include being female, older, not married, black, unemployed, residing in a rural setting, and having lower socioeconomic status and poorer health. These social locations are antecedents to role strains and stress.

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[1] References provided in literature review.

The theoretical orientation for the preceding discussion is located in the context of earlier works on social structure and personality (Park, 1926, 1955; Linton, 1936). Park (1926, 1955) posited that roles are linked to structural positions in society and self is linked to playing multiple roles within the confines of the positions of social structure. Linton (1936) further distinguished between roles and statuses of individuals. Whereas an individual is socially assigned a status (collection of rights and duties), executing the rights and duties is performing the role. The locations (social positions) of persons in the social structure have been observed to influence their personalities (values, attitudes, motives, behaviors, perceptions) (Thomas and Biddle, 1966; Kohn and Schooler, 1983; Hollingshead and Redlich, 1958). Therefore, social determinism of personality is an explanation offered when individual differences are observed among people exposed to similar situations, problems, and in this study, similar role strains.

The elders' health, residence and reciprocity to the caregiver are social factors associated with stress (Morycz, 1985; Dwyer and Miller, 1990). Impaired elders' problems are hardships and challenges experienced by the caregiver in their role relationship with the elder. Thus, the elders' problems are included as dimensions of (caregiver) role strain in the modified model of caregiver stress and coping.

The dimensions of caregiver role strain and associated role strains listed in the figure are supported by the empirical work presented in the literature review.

Coping is observed to be a mediator and a buffer in the stress process (Pearlin and Schooler, 1978; Pearlin et al., 1981; Lazarus and Folkman, 1984; Pearlin, 1989; Wheaton, 1985; Wethington and Kessler, 1986; Lin and Ensel, 1989). Coping explains why people experiencing similar situations may react differently in terms of experiencing stress. Lazarus and Folkman (1984) define coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). In the model utilized, coping functions specifically refer to thoughts and actions that attempt to manage the stressful situation, manage the meaning of the situation, and manage the symptoms of stress (Pearlin et al. 1989; Pearlin and Schooler, 1978). These cognitive and behavioral coping functions are measured in two ways in this study. First, the value of caregiving measures caregivers' thoughts that attempt to manage the meaning of the situation. "Wresting value from negative situations" is a form of emotion-focussed coping which Lazarus and Folkman (1984) describe as "cognitive maneuvers that change the meaning of a situation without changing it objectively" (p.151). Next, the receipt of social support measures caregivers' behaviors that manage the symptoms of stress

related to caregiving. Social support is an environmental coping resource (Turner, 1983; Thoits, 1982; Wethington and Kessler, 1986). According to Pearlin et al. (1989), coping is most effective when accompanied by resources, specifically informal supports and access to and the use of formal services. "Individual coping efforts will probably not bear the the burdens of sustained caregiving for very long" without sources of social support (Pearlin et al., 1989). The utilization of social support, discussed in the literature review, is associated with the reduction of caregiver stress.

By utilizing Pearlin's (1989) premise that persons with lower status in social locations tend to have greater stress, I could predict that more caregiver stress is observed among black caregivers than among their white counterparts. However, social location (i.e., caregiver characteristics) in American society is only one component of the caregiver stress model. The factors in the coping component of the model (i.e. values caregiving and social support) are observed to reduce caregiver stress. Thus, I am more likely to predict that black caregivers have less caregiver stress than whites given the following findings, that: a) blacks (i.e., lower class blacks) are more likely to have strong support networks of real and fictive kin who are expected to provide help when needed (Stack, 1974; Billingsley, 1968; Hill, 1972); b) whites tend to maintain appropriate independence from other kin and

seek help from kin as a last resort (Finch, 1989); and c) black elders have informal support networks that are more diverse (i.e., composed of more varied relationships) than white elders (Chatters et al., 1985, 1986; Ford et al., 1990). Therefore, given the likelihood that black caregivers are more likely than white caregivers to have more social support, hypothesis one is that caregiver stress is greater among white caregivers than among their black counterparts.

Empirical findings show that caregiver stress among white and black caregivers is influenced by different sets of predictors although some common predictors are observed (Morycz, 1985; Mui, 1992). Then it is possible that interaction effects of race with other factors exist. This study explores the possibility of the interaction effects of race with other factors influencing caregiver stress.

Racial Comparisons of Caregiver Stress Among Informal Caregivers

Few studies in the literature examine racial comparisons of informal caregiver stress. Most of the studies that examined the factors of interest (i.e., caregiver stress and race) were based on findings utilizing nonprobability samples (Morycz, 1985; Wood and Parham, 1990) or a sample representative of only one type of caregiver (Mui, 1992).

No racial differences were observed in the amount of caregiver stress experienced by informal caregivers in bivariate analyses (Wood and Parham, 1990); Morycz, 1985).

Although Cantor (1983) found race did not attain a conventional level of significance in influencing caregiver stress, it was close ($p = 0.10$). This finding suggests a relationship tends to exist between caregiver stress and race although the direction of the relationship (beta coefficient for race) is not presented in her study. Dwyer and Miller (1990) found that caregiver stress is lower among black caregivers and higher among their white counterparts, but only when impaired elders reside in small cities.

Two predictors of caregiver stress were found to be common among black and white caregivers (Morycz, 1985; Mui, 1992). Caregiver stress is positively related to the caregiver's perception of the severity of the impaired elder's functional and behavioral problems (Morycz, 1985). Caregiver stress is also positively related to the number of times that caregiving duties conflict with the caregiver's participation in personal and social activities (Mui, 1992).

Different sets of predictors of caregiver stress by race have been observed (Morycz, 1985; Mui, 1992). In addition to the two predictors of caregiver stress that were common to caregivers of both racial groups, there were three other predictors observed among white caregivers and four other predictors observed among black caregivers. Among white caregivers, caregiver stress is negatively related to the availability of social support when high vigilance of supervision is required for the care receiver (Morycz, 1985).

Caregiver stress is greater when a poor parent-child relationship, as opposed to a good relationship, is reported to exist between the impaired elder and the daughter caregiver (Mui, 1992). Additionally, more caregiver stress is observed when caregiving duties conflict with the caregiver's employment (Mui, 1992). Among black caregivers, stress is positively associated with the financial expense (Morycz, 1985) and actual demands of caregiving (i.e., average number of caregiving days per week, average number of hours per day spent in fulfilling caregiving responsibilities, total number of activities of daily living, and instrumental activities of daily living tasks that the caregiver provides) (Mui, 1992). Morycz found that the financial expense of caregiving is the best predictor of caregiver stress among black families and income did not influence their stress. In the stepwise regression analysis employed by Morycz, income was not controlled for in the "best" model that predicts caregiver stress because it was removed for not meeting the statistical significance criterion ($p = 0.10$) to remain in the model. Caregiver stress is also negatively associated with black daughters' perceptions of their own health and with the availability of respite support (Mui, 1992).

In summary, in the few studies that examined racial differences in caregiver stress among informal caregivers, no differences by race were found in the overall amount of caregiver stress. However, the interaction effect of race by

residence is observed to influence caregiver stress. Moreover, the set of predictors of caregiver stress is observed to differ by race. Convenience samples tended to be utilized in the majority of the few studies that examined racial differences (Cantor, 1983; Morycz 1985; Wood and Parham, 1990, Mui, 1992) and thereby the sampling schemes may have resulted in biases (i.e., self-selection bias, referral bias, geographic bias, and other biases that may be unknown). A nationally representative sample of caregivers should be utilized in order to generalize useful findings regarding racial differences in caregiver stress and its predictors to the population of black and white caregivers in the United States.

Other Predictors of Caregiver Stress Among Informal Caregivers

Several factors have been associated with caregiver stress among those caring for elderly relatives. Increased levels of stress are perceived when caregivers lack social support in the forms of formal and informal services assisting with the elder's care (Montgomery and Borgatta, 1989; Segall and Wykle, 1989). The financial costs of caregiving are associated with higher stress among caregivers (Rankin, 1990; Miller, 1989; Montgomery, Gonyea and Hooyman, 1985). Archbold's (1983) qualitative study of a white sample of daughter caregivers revealed that those with lower socioeconomic status experience more stress and hardship

(i.e., perform heavier physical elder care, experience greater costs in personal time and energy). The number of tasks (Miller, 1989), caregiver involvement in performing tasks (Miller, McFall and Montgomery, 1991; Rankin, 1990), and time required to perform tasks (Dwyer and Miller, 1990) are positively related to caregiver stress. Similarly, stress is reported to increase as caregiving activities infringe upon the caregiver's lifestyle (i.e. social and personal restrictions) (Miller, 1989; Rankin, 1990; Robinson and Thurnher, 1979).

Moreover, characteristics of both the caregiver and the elderly care recipient have been related to stress. Caregivers who are female (Miller et al., 1991), married (Miller, 1989), or perceive their health as poor (Rankin, 1990) also perceive higher levels of stress. Robinson (1983) observed that stress is negatively correlated to the caregiver's age and positively correlated to the caregiver being employed. Contrary to Robinson's findings, Dwyer and Miller (1990) found that when the impaired elder lives in a rural locale that stress is positively associated with the caregiver's age; however, the age of the caregiver is not observed to influence caregiver stress when the impaired elder resides in small cities and urban areas. Greater stress is observed when the caregiver has negative employment experiences (i.e., when providing care conflicts with the caregiver's job and the caregiver needs more time off, has to

rearrange work schedules more often, or has to stop working in order to care for the elder) (Dwyer and Miller, 1990). Providing assistance with instrumental activities of daily living (i.e. preparing meals, doing laundry, doing housework, shopping, managing finances) is positively related to caregiver stress (Dwyer and Miller, 1990).

Changes in the impaired elder's characteristics that are associated with higher caregiver stress include deterioration of mental status (Robinson and Thurnher, 1979), an increase in the number of disturbing cognitive behavior problems (Miller, 1989; Segall and Wykle, 1989), and a decreasing ability to reciprocate (i.e., contribute some service or help to the household) (Dwyer and Miller, 1990).

Most of the studies that examined caregiver stress among informal caregivers to impaired elderly persons utilized samples that were predominantly white with small subsamples of blacks (N<30), although a few of the studies had all white samples (Robinson and Thurnher, 1979) or all black samples (Segall and Wykle, 1989). Since the studies were not designed to investigate racial differences, the findings should not be generalized to caregivers across all racial groups. The findings should only be generalized to the population of which their samples are representative (e.g., predominantly white or all white populations; or, all black populations). Consequently, very little information is available regarding a) the factors associated with caregiver stress among black

informal caregivers; b) racial differences in the predictors of stress; and c) racial differences in the amount of stress experienced among black and white family caregivers. Hence, there is a need to examine racial differences and to identify predictors of caregiver stress among black, as well as white, informal caregivers.

Caregiver Burden

Conceptual Framework

Empirical findings reveal that factors in caregiver role strain and associated role strains, represented as dimensions in Pearlin and colleagues' model (1989), are also associated with caregiver burden. So, Pearlin and his colleagues' model of caregiver stress and coping is useful in guiding the conceptualization of caregiver burden. The following factors in caregivers and their associated role strains (Pearlin et al., 1989) are positively associated with caregiver burden: (a) the elder's activities and instrumental activities of daily living difficulties, (b) the elder's cognitive/behavior problems, and (c) the caregiver's involvement in performing activities and instrumental activities of daily living tasks (Kosberg, Cairl and Keller, 1990; Miller, McFall and Montgomery, 1991; Montgomery, Gonyea and Hooyman, 1985; Stoller and Pugliesi, 1989). Social support is inversely associated with burden (Montgomery, Gonyea and Hooyman, 1985). In addition, job conflicts with caregiving responsibilities

and economic costs of caregiving are associated role strains in the model of Pearlin that influence caregiver burden. Therefore, in this study caregiver role strain and associated role strains are antecedents to burden.

Model for Caregiver Burden

The model of caregiver burden displayed in Figure 3 is a modified version of the model of caregiver stress and coping (Figure 1, Pearlin et al., 1989). Key characteristics of the caregiver are included in the model of caregiver burden. The caregiver's gender, social class (socioeconomic status), race and relationship to the elder are characteristics observed in the literature to be associated with caregiver burden. These findings imply that social roles and their positions in the social structure also influence feelings of burden among caregivers. Proximity of the caregiver's residence to the elder is another key characteristic associated with burden. According the modified model, the caregivers' characteristics are antecedent to the caregivers' role strains, which in turn are antecedent to the associated role strains.

The preponderance of three components of burden (i.e., negative changes in an individual's mental health, physical health, and financial status) are observed among lower statuses (i.e., minorities, lower social class) in American society. Mental and physical illnesses are disproportionately greater among persons in the lower socioeconomic strata

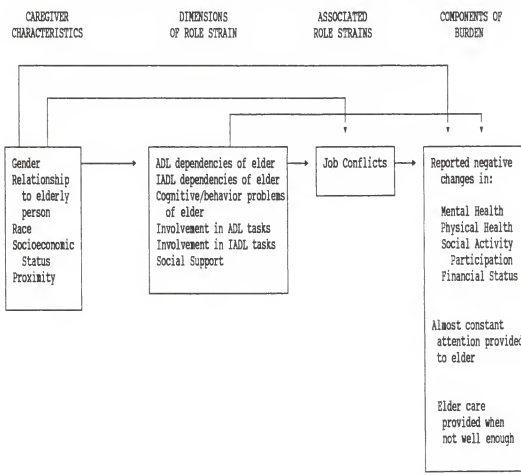


Figure 3. Model of Caregiver Burden
Adapted from Pearlin et al. (1989) Model of Caregiver Stress and Coping

(Hollingshead and Redlich, 1958; Dohrenwend and Dohrenwend, 1969; Kessler, 1982; McLeod and Kessler, 1990; Dubos, 1959; McKeown, 1976; McKinlay et al., 1989). Blacks are overrepresented in the lower socioeconomic strata (i.e., income, education, and occupation) compared to whites (Jaynes and Williams, 1989). Hence, it is not surprising that blacks have more poverty and poorer health than whites (Department of

Health and Human Services, 1985). Therefore, it can be surmised that caregivers who are black will also experience more negative changes in their physical health and financial status than white caregivers. However, black caregivers can be expected to have fewer negative changes in their mental health and participation in social activities than white caregivers given that blacks have stronger and more diverse networks of social support (Stack, 1974; Billingsley, 1968; Hill, 1972; Chatters et al., 1985, Chatters et al., 1986; Ford, et al., 1990). Accordingly, hypothesis two is that negative changes in physical health and financial status are more likely observed among black caregivers than among white caregivers. And hypothesis three is that giving elder care when not well enough, having to give constant elder care, negative changes in mental health and limited participation in social activities are more likely observed among white caregivers than among black caregivers.

Hypothesis three implies that white caregivers are more likely than black caregivers to experience more types of dimension-specific burdens (four of six dimensions). Consequently, this implication suggests that white caregivers experience more overall (global) burden, also, since overall burden is the accumulation of its' six dimensions. Therefore, hypothesis four is that overall caregiver burden is greater among white caregivers than among black caregivers.

Race is not the only social factor present in the caregiver's world. In addition to other factors having an effect on burden, the combined effects of race with other factors may influence burden also. For this reason, this study explores the possibility of interaction effects of race with other social factors influencing caregiver burden.

Racial Comparisons of Caregiver Burden Among Informal Caregivers

Of the two studies found that compared caregiving burden among informal caregivers to the elderly by race, one study utilized a nonprobability sample (Morycz et al.,1987) and the other study utilized a nationally representative probability sample (Dwyer and Miller, 1992).

No racial difference was observed in the bivariate analysis of overall caregiver burden among caregivers whose impaired elders were outpatients at a geriatric treatment center (Morycz et al., 1987). The set of predictors of caregiver burden was observed to differ by race (Morycz et al., 1987). Among black caregivers, burden is positively associated with the following two factors: a) the number of falls and gait disturbances of the impaired elder; and b) the number of deficits the black elder has in performing activities of daily living (i.e., eating, bathing, dressing). Caregiver burden is greater among black caregivers when the impaired elder is not married. Among white caregivers, burden is positively associated with the impaired elder's level of

dementia and the number of deficits the elder has in performing instrumental activities of daily living (i.e., housework, shopping, food preparation, using the telephone). Also, caregiver burden is greater among white caregivers when the elder has Alzheimer's Disease, which is a certain type of dementia.

An interaction effect of residence by race indicates that when impaired elders reside in small cities, caregiver burden is lower among black caregivers than among white caregivers (Dwyer and Miller, 1990).

Although no racial differences were observed in overall caregiver burden, the set of predictors of caregiver burden differed by race. Also, the interaction effect of race by residence influenced burden. The scarcity of literature that is not limited in its usefulness due to nonprobability sampling strategies, when coupled with the aforementioned findings that strongly suggest that racial differences exist in the set of factors that influence caregiver burden, indicates that further research is needed in examining the relationship of race and caregiver burden.

Other Predictors of Caregiver Burden Among Informal Caregivers

Several factors associated with caregiver stress were also associated with caregiver burden. Greater feelings of burden are related to lower social support (Montgomery, Gonyea and Hooyman, 1985), lower socioeconomic status (Kosberg, Cairl

and Keller, 1990), greater caregiver involvement in performing certain tasks in activities of daily living and in instrumental activities of daily living (Miller, McFall and Montgomery, 1991; Montgomery, Gonyea and Hooyman, 1985), more hours of care (Stoller and Pugliesi, 1989), and restrictions on social activities (Poulshock and Deimling, 1984). Miller et al. (1991) found that levels of stress are positively associated with feelings of burden.

Caregiver characteristics related to greater burden include the caregiver being female (Miller et al., 1991; Morycz et al., 1987), coresiding with the elder, and the caregiver's perception that their own physical health and mental health are poor (Kosberg et al., 1990; Stoller and Pugliesi, 1989). Additionally, more burden was observed among caregivers who are spouses when compared to a category of caregivers who are other (nonspecified) relatives of the elder (Kosberg et al., 1990). However, in another study, when spouse caregivers were compared to only adult child caregivers then more burden is found among the adult children (Miller et al., 1991; Morycz et al., 1987). More burden is also observed when the interpersonal relationship between the caregiver and the elder experiences difficulties (Stoller and Pugliesi, 1989).

The characteristics of the care recipient that are associated with higher burden included greater deficits in the care recipient's cognitive (Miller et al., 1991), behavioral

and physical health statuses (Kosberg et al., 1990).

Similar to most of the studies of caregiver stress, most of the studies that examined caregiver burden among informal caregivers to impaired elderly persons utilized samples that were predominantly white with small subsamples of blacks (N<30). The findings of the studies were generalized to informal caregivers, presumably, across all racial groups; however the findings were not from a sample that was representative of black caregivers in particular. Again, very little information is available regarding the amount of caregiver burden that black informal caregivers experience and what factors predict their burden. Therefore, the need to examine for racial differences and for identification of predictors of caregiver burden among black informal caregivers is supported.

Discrepancy Between Theoretical Perspective and Empirical Findings

According to the theoretical perspective, I should expect to find more caregiver stress and burden among black caregivers than white caregivers. However, previous empirical studies indicate no racial differences in the overall caregiver stress and overall burden experienced. The discrepancy between the theoretical perspective and empirical findings on the relationship of race to caregiver stress and burden could be artifacts of biased samples from nonprobability sampling strategies. Nevertheless, the

caregiving literature, in general, supports findings that are inconsistent with the theoretical perspective.

The receipt of social support is an important factor in explaining the discrepancy between the theoretical perspective and the empirical findings. The literature indicates that social support is related to greater psychological well-being and lower incidence of physical illness (Berkman, 1985; Turner, 1981; Lin and Easel, 1989). Also, social support has been observed to moderate the effects of social factors on stress (Gore, 1981; Turner, 1983).

I contend that black caregivers may have lower caregiver stress than white caregivers. I base this on the contention that there is greater social support among black caregivers than white caregivers. If black caregivers have lower caregiver stress than white caregivers, then white caregivers would be more likely to have negative changes in their mental health as a result of experiencing more caregiver stress.

Furthermore, the effects of greater social support among black caregivers should lower the proportion of them that experience limited participation in social activities, have to give elder care when they are ill, and have to give constant attention to impaired elders. Thus, I expect that white caregivers are more likely than black caregivers to experience limited participation in social activities, have to give elder care when they are ill, and have to give constant attention to impaired elders.

Hence, four components of caregiver burden should be greater among white caregivers (i.e., negative changes in mental health, limited participation in social activities, continued elder care when they are ill, and need for constant attention to impaired elders) and two components will be greater among black caregivers (i.e., negative changes in physical health and financial status). Therefore, as previously stated, this position suggests that overall burden should be greater, also, among white caregivers.

If no race differences are observed in caregiver stress and burden, respectively, then these findings do not mean that the correlates of stress and burden do not differ by race. Stress and burden, respectively, can be the same for both race groups but correlated with different factors.

CHAPTER THREE
DESIGN AND METHODS

Sample

The sample of primary informal caregivers used in this study is from the 1982 National Informal Caregivers Survey (NICS), which is a supplement to the 1982 National Long Term Care Survey (NLTCS). According to Tourangeau (1984), the NLTCS respondents (i.e., persons 65 years or older with at least one ADL or one IADL impairment of at least three months in duration) were asked to identify persons who helped them with activities of daily living and instrumental activities of daily living. Helpers who were 14 years or older and who provided unpaid assistance to the impaired elderly person with at least one ADL were eligible for selection into the NICS sample.

The NICS sample was selected from the impaired elders in the NLTCS sample. A multistage sampling technique was utilized in selecting the samples in the NLTCS and NICS (United States (US) Bureau of Census, 1984; Tourangeau, 1984). The sampling frame used from which to select the NLTCS sample was the roster of Medicare enrollees maintained by the Health Care Finance Administration. Persons 65 years and older who were not Medicare enrollees were missed by the sampling frame.

Although this undercoverage varied by age, race and sex (i.e., greater for black persons less than 85 years old, greater for persons less than 70 years old, and greater for women), it was estimated to be a small proportion (i.e. no more than 3.7%) of the population of interest (US Bureau of the Census, 1984). Furthermore, according to the US Bureau of the Census (1984), bias due to the undercoverage was partially corrected for by post-stratification.[1] Both the NLTCS sample and the NICS sample are equal probability, or self-weighting, samples that were selected using proportionate stratification techniques to assure that the NICS sample is representative of the population in terms of geographic region, size of place (i.e., overall population), and size of Medicare population (Tourangeau, 1984).

Selection of National Long-Term Care Survey (NLTCS) Sample of Impaired Elderly Persons

According to the US Bureau of the Census (1984), the entire land area of the United States was divided into clusters of 1,924 primary sampling units (PSUs) that consisted of individual counties or groups of adjoining counties. To reduce costs the sample of PSUs for the NLTCS was selected from the clusters of PSUs that were generally used by the Census Bureau. The PSUs were grouped into 376 strata based on geographic region, level of urbanization, percentage of

[1] See Appendix for description of post-stratification method.

population that is nonwhite, and per capita retail sales in order to assure that the NLTCS sample is representative of the population of persons in the United States according to regional and rural/urban residences, racial group memberships, and areas with various costs of living. One PSU was selected from each stratum. A PSU's selection probability was equal to its 1970 population as a proportion of the total 1970 population in its stratum.

The resulting 376 PSUs were collapsed and regrouped to form 173 strata based on geographic region, overall population, and size of Medicare population (i.e., the proportions of the overall populations that were 65 years and older and enrolled in Medicare). Thirty-nine of the 173 strata consisted of only one A-sample PSU (i.e., a PSU that had been selected for use in a number of the Census Bureau's surveys) and each of the thirty-nine A-sample PSUs were selected into the NLTCS sample. Each of the thirty-nine PSUs had a 1978 Medicare population of 87,000 or greater. One PSU was selected from each of the remaining 134 strata of which each stratum contained an estimated Medicare population of approximately 90,000. The PSU from each of the 134 strata was selected with a probability proportional to its A-sample stratum's estimated 1978 Medicare population. Hence, the 173 strata were represented by 173 PSUs and all Medicare enrollees who lived outside the 173 PSUs were eliminated from the NLTCS sample.

According to Tourangeau (1984), at this stage in the sampling strategy, a ten percent sample of Medicare enrollees was systematically selected within most of the 173 PSUs. A fifty percent sample was selected from the Medicare enrollees in the smallest, and remaining, PSUs because it was thought that a within-PSU sampling fraction greater than ten percent was required in order for the NLTCS sample to be representative of the elderly population observed in the smallest PSUs. The reduction in the NLTCS sample described here was done in order to reduce the amount of processing required during the rest of the sample selection (Bureau of the Census, 1984; Tourangeau, 1984).

The Medicare sample was stratified by age (65-74, 75-79, 80-84, 85 and older) and the first and second age groups were stratified by the original reason for Medicare entitlement (age and disability). The original reason for entitlement was not known for enrollees over 79 years of age since entitlement data were not collected on the older populations. A systematic sample was selected from the strata in order to ensure proportional representation of persons by age and, as much as possible, by original reason for entitlement. A total of 55,000 persons were selected.

A large sample was initially chosen because 6,000 detailed interviews were desired and the exact rate at which persons would qualify for the detailed interviews was unknown. Since the definition of impairment had been inconsistent, it

was not clear at the outset what percentage of the screening sample would meet the NLTCS definition of impairment (a person was defined as impaired if he or she was unable to carry out at least one of the ADL or IADL without special assistance and if the impairment had lasted, or was expected to last, at least three months) (US Bureau of the Census, 1984). The sample of 55,000 persons comprising the NLTCS sample was systematically subdivided into 101 subsamples to be fielded in a random order in order to estimate the rates of impairment in the population. The impairment rates were estimated from the first subsamples screened and, eventually, sixty-six of the subsamples (i.e., 35,790 persons) were assigned for screening. Of the 35,790 persons designated for screening, 2,472 persons were eliminated because they were ineligible (i.e., institutionalized, deceased, or had moved outside of the country) when the screening sample was taken. Of the remaining 33,318 eligible persons in the screener sample, 31,911 completed the screening interviews for a response rate of 95.78%. Seven hundred eighty-five persons were eliminated because they left the sample before the interviews began (i.e., were institutionalized, died, or moved outside the country) and, 622 were not interviewed due to several reasons (i.e., moved out of range of PSU, unable to locate, no one home, temporarily absent, refused, unable to respond, other reasons). Of the 31,911 persons who completed the screening interviews, 25,518 were screened out of the NLTCS sample

designated for detailed interview because they were observed to not meet the definition of impairment. Therefore, 6,393 noninstitionalized impaired elderly persons were eligible for detailed interview.

Selection of National Informal Caregivers Survey (NICS) Sample

According to Tourangeau (1984), a subsample of the NLTCS PSUs was selected for retention in the NICS because the desired size of the NICS sample was approximately 2,000 cases. Each of the thirty-nine A-sample PSUs selected into the NLTCS sample was also selected into the NICS sample. Of the remaining 134 PSUs selected into the NLTCS, a subsample of 107 PSUs were systematically selected for retention in the NICS sample. Each of the 107 PSUs had the same probability for retention (i.e., 107 over 134). Hence, 146 PSUs were used from which to initially select impaired elderly persons from whom eligible caregivers would ultimately be selected. Within all 39 of the A-sample PSUs, the probability of selecting an impaired person for the NICS sample was set at the rate at which the other PSUs had been subsampled (i.e., 107/134). Within the remaining 107 NICS PSUs, all impaired persons were selected into the NICS sample. Once an impaired elderly person had been selected for the NICS sample, all of their eligible caregivers were included in the NICS sample. As defined earlier in the paper, caregivers were eligible for the study if they assisted the impaired elderly person with at

least one ADL, received no pay for their assistance, and were at least 14 years of age. A total of 2,369 informal caregivers were retained in the NICS sample because they were associated with the 1,642 impaired persons who were retained in the NLTCS sample.

Of the 2,369 informal caregivers in the NICS sample, 280 were observed to be ineligible and were eliminated. Reasons for ineligibility included respondent gave occasional help, moral support, and no help with ADL; paid caregiver; impaired elderly person did not need help from others; the caregiver was a "standby" caregiver; never gave care; younger than 14 years of age; the respondent lived with the elder but did not give ADL help; the respondent was a paid household helper but did no ADL care; the respondent was a former caregiver.

Hence, 2,089 informal caregivers were eligible for interview. Of the 2,089 caregivers eligible, 165 caregivers did not complete the interviews. The reasons that 165 caregivers did not complete the interviews included the respondent was never home; refused or broke off interview; too ill; moved out of interview areas; moved and could not be relocated; deceased; unavailable for entire interview period; and, other reasons. Therefore, 1,924 caregivers completed the interview for a response rate of 92.1%.

In the present study of white and black informal adult caregivers, 135 caregivers in the NICS sample were further eliminated. Reasons for their elimination included 50

respondents reported that they were in other racial groups or refused to identify their race (i.e., Asian or Pacific Islander; Native American, Eskimo or Aleut; and, other), 55 were of Hispanic ethnicity (i.e., Mexican-American, Chicano, Mexican, Puerto Rican, Cuban, Central or South American, other Spanish), and all 30 caregivers who were younger than 18 years of age were omitted because this age group had a black subsample that was too small (N=3) to be useful in the study. Therefore, in the proposed study there is a total of 1,789 informal caregivers, of whom 1,521 (85%) are white and 268 (15%) are black.

Measurement of Variables

Dependent Variables

Symptom of stress

Table 1 displays the measurements of the variables of interest utilized in the study. Caregiver stress and caregiver burden are the two dependent variables in the study. Caregiver stress is a continuous variable in which the respondents reported the number of points that showed "if it causes you 100 points of stress to bathe (the impaired elder), how many points would you give to show how much stress it causes you to do all of the things you do to help (the impaired elder)?" The response to this item reflects the definition of psychological (mental) stress that is used in this study, that is stress is the caregivers' cognitive

Table 1. Measurement of Variables

Variable	Measurement
Symptom of Stress	
Caregiver stress	Number of points that showed, "if it causes you (the respondent) 100 points of stress to bathe (the impaired elder), how many points would you give to show how much stress it causes you to do all of the things you do to help (the impaired elder)?"
Components of Burden	
Overall caregiver burden	Global score ranging from 0 to 6 wherein higher values are indicative of greater burden; global score measured by summing the responses of whether the six dimensions of burden are experienced by the caregiver due to giving elder care
Dimension-specific burden:	
physical health worsened	1=yes 0=no
caregiving is emotionally hard on me	1=yes 0=no
caregiving limited my social life	1=yes 0=no
care cost more than I can afford	1=yes 0=no
have to give care when I don't feel well enough	1=yes 0=no
have to give constant attention to the elder	1=yes 0=no
Caregiver Characteristics	
Age	Number of years
Household size	Number of other (excluding impaired elder) persons residing with caregiver
Socioeconomic status	Household income with 16 categories ranked from under $3,000 annually to $50,000 or more annually

Table 1--continued

Variable	Measurement
Race	1=black 0=white
Gender	1=female 0=male
Relationship to elderly person	A series of dummy variables wherein spouse is reference group 1=adult child and child-in-law 0=other 1=other relatives and nonrelatives 0=other
Marital status	1=married 0=not married
Employment	1=fulltime 0=not fulltime
Health	1=good or better 0=less than good
Proximity to elder	A series of dummy variables wherein co-resident is reference group 1=10 minutes or less travel time to elder 0=other 1=more than 10 minutes to 12 hours travel time to elder 0=other
Elder Characteristics	
Health	1=good or better 0=less than good
Residence	A series of dummy variables wherein rural residence is reference group 1=town<50,000 0=other 1=city of 50,000-250,000 0=other 1=large city =>250,000 and suburb of large city 0=other
Reciprocity (6 acts: chores, babysitting, gifts/money, companionship, makes caregiver feel useful, helps in other ways)	Global score ranging from 0 to 6 wherein higher values are indicative of greater reciprocity; global score measured by summing the number of acts of reciprocity that the caregiver reports the elder performs

Table 1--continued

Variable	Measurement
Role Strain Dimensions	
ADL dependencies of elder (feeding, bathing, toileting, dressing, getting in/out of bed, getting around in the house)	Global score ranging from 0 to 6 wherein higher values are indicative of more demand for help with ADL dependencies; global score measured by summing the number of reported ADL dependencies
IADL dependencies of elder (food preparation, housework, laundry, phone calls, shopping, handling money, getting around outside the house, transporting around town)	Global score ranging from 0 to 8 wherein higher values are indicative of more demand for help with IADL dependencies; global score measured by summing the number of reported IADL dependencies
Cognitive/behavior problems of elder (forgets, confused or uncooperative; senile; yells; embarrasses caregiver)	Global score ranging from 0 to 4 wherein higher values are indicative of more cognitive/behavioral problems; global score measured by summing the number of reported cognitive/behavioral problems
Involvement in ADL tasks (performs the ADL tasks listed above)	Global score ranging from 0 to 6 wherein higher values are indicative of greater caregiver involvement in assisting the elder with ADL; global score measured by summing the number of ADL with which the caregiver assisted the elder
Involvement in IADL tasks (performs the IADL tasks listed above and does errands)	Global score ranging from 0 to 9 wherein higher values are indicative of greater caregiver involvement in assisting the elder with IADL; global score measured by summing the number of IADL with which the caregiver assisted the elder
Social activity restriction	1=yes 0=no
Constant attention	1=yes 0=no
Associated Role Strains	
Job conflict	1=has had job conflict 0=has had no job conflict

Table 1--continued

Variable	Measurement
Economic Cost (care costs more than caregiver can afford)	1=yes 0=no
Coping	
Values caregiving	Number of points which show how good it makes the respondent feel to help the impaired elder, the better the respondent feels then the bigger the number the respondent should give (implied assumption that 100 points is the the baseline which describes how good the respondent usually feels when they help someone)
Social support (anyone else helps take care of elder in any way now)	1=yes 0=no

appraisals that their relationships with the environment tax or exceed their resources and endanger their well-being (Lazarus and Folkman, 1984).

The stress data ranged from 0-9,999,999 points (mean = 302,081) and 14 respondents (0.8%) have missing data on this variable. Given thatthe responses are highly skewed to the right with 60 respondents reporting 10,000 and greater stress points, a log transformation was performed on the data. The transformed stress variable used in the analysis ranged from 0-16 points (mean = 4.36, standard deviation = 2.54).

The 14 respondents with missing data were dropped from the sample. Therefore, all of the analyses of caregiver stress are based on a sample size of N= 1,775, wherein black caregivers are N_b = 263 (14.8%) and white caregivers are N_w = 1,512 (85.2%).

Components of burden

Caregiver burden is viewed as a multidimensional construct consisting of caregivers' perceptions that (a) caring for impaired persons negatively affects caregivers' mental health, physical health, social life, and financial status (Zarit, Todd and Zarit, 1986); (b) they have to provide elder care when they are not well enough; and (c) they have to provide almost constant attention to the elder (Miller, McFall and Montgomery, 1991). Each of the six specific dimensions of burden is a categorical variable which is coded 1 if the respondents reported that caring for impaired elderly persons caused their physical health to worsen, was emotionally hard on them, limited their social life or free time, cost more than they could afford, caused them to provide elder care when they were not well enough, and caused them to provide constant attention to the elder.

Overall caregiver burden is a continuous variable. It is measured by summing the responses of whether the six dimensions of burden are perceived. The summated burden scores range from zero to six (mean = 1.91, standard deviation

= 1.79) wherein higher values indicate that more burden is experienced.

Independent Variables

Measurement of characteristics of caregiver

Nine variables are used to describe the caregiver. Age is a continuous variable. The one missing value on the age variable is recoded to the mean. Household size is a continuous variable measured as the number of other (excluding the impaired elder) persons living with the caregiver.

Socioeconomic status is measured by household income, an ordinal variable coded into 16 categories. The midpoint of the appropriate category has been assigned to each respondent in order to reflect a dollar value. The values for the recoded income variable range from $1,500 to $50,000. The 262 (14.6%) missing values on the income variable were assigned by a two-step procedure that maximizes the number of observations used in the analysis and simultaneously does not distort the mean or variance. First, the proportion of responses for each income level is determined. Second, the 262 respondents with missing data are randomly assigned, by a computer generated procedure, to the levels of income proportional to the response frequencies. According to Beaulieu and Miller (1984), the proportional allocation procedure is superior to assigning zeros or assigning mean values. Assigning zeros

distorts central tendency and dispersion. Assigning mean values maintains central tendency but reduces variance.

Race, gender, marital status, and employment are categorical variables that are coded 1 when the caregiver is black, female, married, and works full-time. Otherwise, the aforementioned variables are coded 0. The two-step allocation procedure is used to assign the seven (0.4%) missing values on the marital status variable proportional to the response frequencies.

The relationships of caregivers to impaired elderly persons are measured by a categorical variable that is coded into 3 categories (i.e., spouses, adult children/children-in-law, and other relatives/nonrelatives). Dummy variables are created and spouses are treated as the reference group.

Caregivers' health is originally measured by an ordinal variable that is coded into four categories in which the respondents rated their general health either excellent, good, fair or poor. For the purposes of this study, in order to determine if stress is influenced by the racial groups when their health is good versus not good, the caregiver's health is dichotomized. It is recoded 1 if the caregiver's health is good or better and 0 if the health is less than good (i.e., fair and poor).

The proximity of caregivers to elders is a categorical variable with three categories indicating whether caregivers co-resided with impaired elders or the amount of time required

for caregivers to travel from their homes to the elders (Table 1 includes a list of the categories). Dummy variables are created and co-residents are treated as the reference group.

Measurement of characteristics of elder

The caregiver was asked to compare the elder's health to the health of other elderly persons of similar age. The elder's health status is originally coded as an ordinal variable with four categories. Caregivers rated elders' health as either excellent, good, fair or poor. The 141 respondents (7.9%) with missing data on the elder health variable are assigned according to the aforementioned two-step allocation procedure. Then, as previously discussed under recoding caregiver health, the elder health variable is recoded as 1 if the health was good or better and as 0 if the health is less than good (i.e., fair and poor).

The measure of elders' reciprocity is created by summing the number of acts of reciprocity that caregivers reported elders provided to them (i.e., helped with household chores, babysitting, gifts/money, was company to caregivers, made caregivers feel useful and needed, helped in other ways). Responses are coded 1 when the caregiver reported an activity with which the elder helped. The range of values for elder reciprocity is from zero to six.

Residence represents locales in which the impaired elderly person lived at the time in which they received assistance from the caregiver. Residence is a categorical

variable with four categories ranging from rural areas to large cities with populations that were equal to and greater than 250,000 people (Table 1 lists all areas of residence). Dummy variables are created and rural residences are treated as the reference group.

Measurement of dimensions of role strain

Nine variables are used to describe the dimensions of role strain experienced by the caregiver. The demands of caregiving represent functional, cognitive and behavioral difficulties of the impaired elderly persons as reported by caregivers. Functional difficulties included dependencies in activities of daily living (ADL) and dependencies in instrumental activities of daily living (IADL). Activities of daily living dependencies of the elder are deficits that required the caregiver to do something to the elder that was personal in nature (i.e., come into direct physical contact with the elder) in order to provide assistance (i.e., bathing, feeding, toileting, dressing, getting in and out of bed, getting around in the house). The number of ADL dependencies that the elder reported having is summed as a measure of functional difficulty. Responses are coded 1 when the they reported having an ADL dependency. The range of values for ADL dependencies is from zero to six. Instrumental activities of daily living dependencies are deficits that generally required the caregiver to do something for the elder (i.e., perform an act for the elder) in order to provide assistance

(i.e., food preparation, housework, laundry, making telephone calls, handling finances, shopping). Two other instrumental activities of daily living required the caregiver to do something of an impersonal nature to the elder (i.e., getting around outside the house, and transporting around the community/town). The instrumental activities of daily living measure of functional impairment is created by summing the number of IADL dependencies of the elder. Responses are coded 1 when elders reported having an IADL dependency. The range of values for IADL dependencies is from zero to eight. Cognitive status and behavior problems are measured by summing the number of the elder's cognitive and behavior problems perceived and reported by the caregiver (i.e., elder sometimes forgets, is confused, or uncooperative; acts senile; yells at caregiver when upset; and embarrasses caregiver). Responses are coded 1 for each cognitive/behavior problem that caregivers reported for elders. The range of values for cognitive/behavior problems is from zero to four.

A measure of caregivers' involvement in ADL tasks is created by summing the number of ADL tasks that caregivers reported helping impaired elders with (i.e., feeding, bathing, toileting, dressing, getting in/out of bed, and getting around inside the house). Responses are coded 1 when the caregiver reported helping with an ADL task. The range of values for caregiver involvement in ADL tasks is from zero to six. The caregivers' involvement in IADL tasks is measured similarly by

summing the number of IADL tasks that caregivers reported helping elders with (i.e., food preparation, housework, laundry, making telephone calls, handling finances, shopping, getting around outside the house, and transporting around the community/town). Additionally, the caregivers reported assisting the elders by doing errands.[1] Responses are coded 1 when the caregiver reported helping with an IADL task. The range of values for caregiver involvement in IADL tasks is from zero to nine.

Caregivers' involvement in constant supervision of elders and their limited participation in social activities are categorical variables. These variables are coded 1 when caregivers reported giving almost constant attention to elders and when giving elders care limited their social lives or free time.

Measurement of associated role strains

Two variables are used to describe role strains in other areas of the caregiver's life that are created by or associated with caregiving. Job conflict and economic cost of providing care to the impaired elderly person are dichotomous categorical variables. Job conflict is coded 1 when caregivers reported experiencing any caregiving-related

[1] "Extra time spent helping (the elder) with other small errands" was the ninth instrumental activity of daily living included in the caregivers' interview that was not in the elders' interview. Therefore, a maximum of eight instrumental activities of daily living dependencies can be reported by elders and caregivers can report involvement in a maximum of nine instrumental activities of daily living tasks.

conflict on their jobs (i.e., because I had to take care of the elder I worked fewer hours, rearranged job schedule, took time off without pay, or quit a job). Economic cost is coded 1 when giving care costs more than caregivers could afford.

Measurement of coping strategies and behaviors

Two variables are used to describe coping strategies and behaviors utilized by the caregiver. Managing to find value in the caregiving situation is a continuous variable in which caregivers reported the number of points that showed how good it made them feel to help the impaired elders. The implicit assumption is that the baseline of 100 points (utilized in other magnitude scaling items) was used to show how good the respondents generally felt when they helped someone. The values caregiving data ranged from 0-9,999,999 points (mean = 594,563) and 24 respondents (1.3%) have missing data on this variable. Given the responses are right-skewed with 164 respondents reporting 1,000,000 and greater points valuing caregiving, a log transformation is performed on the data. The transformed values caregiving variable ranged from 0-16 points (mean = 6.82, standard deviation = 3.07). The two-step allocation procedure discussed earlier in the paper is utilized to assign the missing values on the values caregiving variable proportional to the response frequencies.

Receipt of social support is measured by a categorical variable. It is coded 1 when the caregiver reported that

someone else or others regularly helped provide care to the impaired elder in any way.

Data Analysis

Descriptive statistics describe the characteristics of the total sample of caregivers. The chi-square test, Wilcoxon rank sum test, two sample two-tailed and one-tailed z-test, and F-test are the test statistics utilized. The alpha and beta levels of significance are set at 0.01 and 0.10, respectively, for all the statistical tests.

Bivariate analyses are performed to examine racial differences in the characteristics of the sample of caregivers and the sample of impaired elderly persons, respectively.

Ordinary least squares regression analyses are used to examine the association between (a) race and caregiver stress ignoring other variables and (b) race and caregiver burden ignoring other variables. The bivariate regression model is $y = \alpha + b_1(\text{race}) + e$.

Ordinary least squares regression analyses are also used in the multivariate models that examine the association between (a) caregiver stress and race controlling for other factors; and (b) overall caregiver burden and race controlling for other factors. The multiple regression model for stress is $y = \alpha + b_1(\text{race}) + b_2(\text{gender}) + b_3(\text{relation}) + b_4(\text{married}) + b_5(\text{age}) + b_6(\text{income}) + b_7(\text{employed}) + b_8(\text{health})$

$+ b_9$(household size) $+ b_{10}$(residence) $+ b_{11}$(elder ADLs)

$+ b_{12}$(elder IADLs) $+ b_{13}$(cognitive/behavior problems)

$+ b_{14}$(perform ADL tasks) $+ b_{15}$(perform IADL tasks)

$+ b_{16}$(constant supervision) $+ b_{17}$(limited social life)

$+ b_{18}$(elder health) $+ b_{19}$(elder reciprocity)

$+ b_{20}$(job conflicts) $+ b_{21}$(economic costs)

$+ b_{22}$(values caregiving) $+ b_{23}$(social support) $+ e$

The multiple regression model for burden is

$y = \alpha + b_1$(race)$+ b_2$(gender) $+ b_3$(relation)

$+ b_4$(income) $+ b_5$(proximity to elder) $+ b_6$(elder ADLs)

$+ b_7$(elder IADLs) $+ b_8$(cognitive/behavior problems)

$+ b_9$(perform ADL tasks) $+ b_{10}$(perform IADL tasks)

$+ b_{11}$(job conflicts) $+ b_{12}$(social support) $+ e$

An interaction effects model is estimated on the total sample (i.e., combined white and black caregivers) to test for the multiplicative effects of the cross products of race with each other variable, thereby identifying independent variables that have different effects for the racial groups on the dependent variables. If there are no significant interaction effects, then a main effects model is estimated on the total sample to test for the additive effects that race and the other independent variables have on the dependent variables.

Logistic regression models are estimated to examine the effect that race has on the probability of the caregiver experiencing a dimension-specific burden ignoring and controlling for other factors. The logit model is

$$\log(\pi/1-\pi) = \alpha + b_1(\text{race}) + b_2(\text{gender}) + b_3(\text{relation}) + b_4(\text{income}) + b_5(\text{proximity to elder}) + b_6(\text{elder ADLs}) + b_7(\text{elder IADLs}) + b_8(\text{cognitive/behavior problems}) + b_9(\text{perform ADL tasks}) + b_{10}(\text{perform IADL tasks}) + b_{11}(\text{job conflicts}) + b_{12}(\text{social support}) + e$$

To ease the interpretation of the findings, the natural antilogarithm is taken of both sides of the equation. Therefore, the model used to interpret the odds of experiencing a dimension-specific burden to the odds of not experiencing it ($\pi/1-\pi$) is the following:

$$(\pi/1-\pi) = e^{\alpha + b1(\text{race}) + b2(\text{gender}) + b3(\text{relation}) + b4(\text{income}) + b5(\text{proximity to elder}) + b6(\text{elder ADLs}) + b7(\text{elder IADLs}) + b8(\text{cognitive/behavior problems}) + b9(\text{perform ADL tasks}) + b10(\text{perform IADL tasks}) + b11(\text{job conflicts}) + b12(\text{social support}) + e}$$

The interaction effects of race and each of the other factors is also estimated on the probability of the caregivers experiencing dimension-specific burden.

Sample Characteristics

The descriptive characteristics of both the total samples of informal caregivers and impaired elderly persons (i.e., care receivers), respectively, are shown in Table 2. Most of the caregivers and elders are females. However, there are more impaired elderly males than there are male caregivers in the samples (i.e., 40% and 28.6%, respectively). The largest group of caregivers is adult children and children-in-law

(44.7%), followed by spouses (37.1%) and the group of other relatives and nonrelatives (18.3%). The average age of the caregivers is 59 years and the median income is $13,500. Most of the caregivers are married, in good or better health, and get some type of regular help (i.e., social support) with providing care to the elderly persons. Also, most of the caregivers do not work fulltime and do not have job conflicts due to caregiving responsibilities. Although most of them do not live with the impaired elders, it takes them 10 minutes or less to get to the elders' residences. Many caregivers (37.5%) live with the elderly persons. However, most of the caregivers live alone given that the mean number of persons, other than the impaired elder, that live with the caregiver is less than one (mean=0.40). Given respective ranges of 0 to 16 points, the means of the number of points attributed to values caregiving and to caregiver stress are 6.80 and 4.36, respectively. The mean overall caregiver burden is 1.91. Almost half of the caregivers (49.5%) have limited participation in social activities due to elder care responsibilities. Many of the caregivers report that giving care is emotionally hard on them (41.9%) and that they have to give care when they are not well enough (37.3%). Some caregivers (30.1%) have to give almost constant attention to the elders. The smallest proportions report that giving care costs more than they can afford (16.6%) and has caused their physical health to worsen (15.7%).

Table 2. Characteristics of Informal Caregivers and Impaired Elderly Persons[a].

Variables	Informal Caregivers	Impaired Elderly Persons
Gender		
Male	28.6	40.0
Female	71.4	60.0
Relationship to elder		
Spouse	37.1	
Adult child/child-in-law	44.7	
Other relatives and nonrelatives	18.3	
Marital status		
Married	71.3	52.1
Not married	28.7	47.9
Income (median value)	$13,500	$9,500
Health		
Excellent	23.0	7.3
Good	42.4	23.0
Fair	25.4	35.9
Poor	9.1	33.8
Age in years (mean value)	59	
Age groups		
65-74		44.0
75-79		19.6
80-84		16.7
85+		19.7
ADL difficulties (mean value)		2.4
Helps with ADLs (mean value)	2.0	
IADL difficulties (mean value)		4.5
Helps with IADLs (mean value)	4.9	
Cognitive/behavior problems[b] (mean value)		1.4
Has to give almost constant attention to elder	30.1	

Table 2--continued

Variables	Informal Caregivers	Impaired Elderly Persons
Has to give care when not well enough	37.3	
Giving care is emotionally hard	41.9	
Giving care has caused physical health to worsen	15.7	
Giving care has limited participation in social activities	49.5	
Giving care costs more than can be afforded	16.6	
Acts of reciprocity from elderly person to caregiver[c] (mean value)		1.9
Residence		
Rural area (open country or farm)		21.0
Small town of <50,000 population		39.3
City of 50,000-250,000 population		18.3
Large city of >250,000 population and suburb		21.4
Proximity to elder		
Coresidence	37.5	
Travel time to elder		
less than or equal to 10 minutes	52.3	
more than 10 minutes to 12 hours	10.2	
Employment		
Fulltime	19.6	
Not fulltime	80.4	
Other persons living with caregiver[d] (mean value)	0.40	
Job conflict due to caregiving situation	20.3	
Values caregiving[e] (mean value)	6.80	
Gets social support regularly	65.4	
Caregiver stress[f] (mean value[g])	4.36	
Overall caregiver burden (mean value)	1.91	

Table 2--continued

Variables	Informal Caregivers	Impaired Elderly Persons
N	1,789	1,361

[a] Source: 1982 National Informal Caregiver Survey Supplement to National Long-Term Care Survey
[b] For both racial groups, cognitive/behavior problems range from 0 to 4
[c] Acts of reciprocity from elderly person to caregiver range from 0-4 for whites and from 0-5 for blacks
[d] For both racial groups, the number of other (excluding impaired elder) persons living with the caregiver ranges from 0 to 6
[e] log transformation of Values Caregiving variable ranges from 0-16
[f] log transformation of Caregiver Stress values range from 0-16
[g] Analysis of Caregiver Stress based on N=1775

The majority of elders is married (52.1%), in fair to poor health (69.7%), and range in age from 65 to 79 years (63.6%). The median income is $9,500. While the greatest proportion of elders (39.3%) live in small towns (i.e., less than 50,000 population), almost equal proportions of them live in rural areas and in combined large cities and suburbs (21.0% and 21.4%, respectively). The smallest proportion of elders (18.3%) live in moderate-sized cities of 50,000 to 250,000 population. They provide some assistance to their caregivers (mean acts of reciprocity = 1.9) and have few cognitive/behavior problems (mean = 1.4).

While impaired elders have difficulty performing a mean of 2.4 of the possible six activities of daily living, caregivers help them with a mean of 2.0 activities of daily living. The elders also have difficulty performing a mean of 4.5 of the possible eight instrumental activities of daily

living and caregivers help them with a mean of 4.9 of the nine[2] instrumental activities of daily living.

[2] As previously noted, an additional (ninth) instrumental activity of daily living task (help with errands) was reported by caregivers while only eight instrumental activities of daily living dependencies were reported by elders.

CHAPTER FOUR
RESULTS

Bivariate Analyses

The characteristics of both the informal caregivers sample and the elders sample are compared by race in order to determine whether the characteristics are the same for the respective subsamples of black persons and white persons. Table 3 displays findings regarding comparisons of black and white caregivers. Racial differences ($p<.001$) are observed in the marital status of caregivers and in their relationships to impaired elderly persons. Fewer black caregivers than white caregivers are married (49.6% and 75.3%, respectively). Although most informal caregivers are adult children or children-in-law for both black and white caregivers (44.0% and 44.8%, respectively), given that more white caregivers are married to impaired elders it is not surprising to find that more white caregivers are spouses than other relatives and nonrelatives (39.4% and 15.8%, respectively). Among blacks more caregivers are other relatives and nonrelatives than spouses (32.1% and 23.9%, respectively). Racial differences are also observed in the age and household income of the caregivers. Black caregivers are younger than white caregivers (mean age of 52 and 60, respectively) and have a

Table 3. Comparison of Informal Caregiver Characteristics by Race[a]

Variables	Caregivers		x^2 Probability or Probability of t
	White	Black	
Gender			p=.12
Male	29.3	24.6	
Female	70.7	75.4	
Relationship to Elder			p<.001
Spouse	39.4	23.9	
Adult child/child-in-law	44.8	44.0	
Other relatives and nonrelatives	15.8	32.1	
Marital Status			p<.001
Married	75.3	49.6	
Not Married	24.7	50.4	
Income (median category)	$13,500	$9,500	p<.001[b]
Health			p=.24
Good or better	66.0	62.3	
Less than good	34.0	37.7	
Age in years (mean value)	60	52	p<.001
Employment			p=.67
Fulltime	19.4	20.5	
Not Fulltime	80.6	79.5	
Proximity to Elder			p<.01
Coresidence	36.4	44.0	
Travel time to elder			
less than or equal to 10 minutes	53.9	42.9	
more than 10 minutes to 12 hours	9.7	13.1	
Other Persons living with Caregiver[c] (mean value)	0.39	0.54	p<.05
Gets social support regularly	64.1	72.8	p<.01
Job conflict due to caregiving situation	20.3	20.5	p=.92
Values caregiving[d] (mean value)	6.78	6.90	p=.54
Helps with ADLs (mean value)	2.0	2.4	p<.001
Helps with IADLs (mean value)	4.8	5.1	p<.05

Table 3--continued

Variables	Caregivers		x^2 Probability or Probability of t
	White	Black	
N	1,521	268	

[a] Source: 1982 National Informal Caregiver Survey Supplement to National Long-Term Care Survey
[b] z-test based on Wilcoxon test for ordinal categorical variables
[c] For both racial groups, the number of other (excluding impaired elder) persons living with the caregiver ranges from 0 to 6
[d] log transformation of Values Caregiving values ranges from 0-16

lower median household income than their white counterparts ($9,500 and $13,500, respectively). Moreover, a racial difference ($p<.001$) is observed in the mean number of activities of daily living with which caregivers assist elders. Black caregivers help elders with more activities of daily living than white caregivers (means of 2.4 and 2.0, respectively). Also, at the $p<.05$ significance level, black caregivers help impaired elderly persons with more instrumental activities of daily living than white caregivers (5.1 and 4.8, respectively). Racial differences at $p<.01$ level are further observed in the caregiver's proximity to the impaired elderly person and in the receipt of regular social support. Fewer white caregivers than black caregivers live with impaired elderly persons (36.4% and 44.0%, respectively). Yet, exclusive of co-residence, more white caregivers (53.9%) than black caregivers (42.9%) are in close proximity to elders

(i.e., take 10 minutes or less to get to elders). More black caregivers (72.8%) than white caregivers (64.1%) receive help (i.e. social support) regularly with providing care to elders.

The bivariate analyses shows that while no racial differences are observed in the caregiver's gender, employment status, health, value placed on caregiving, or job conflicts, racial differences are observed in over one-half (8 of 13) of the characteristics found in the literature to influence both caregiver stress and burden. Racial differences in the characteristics of the caregiver samples imply that since factors that tend to influence stress and burden are not all the same then caregiver stress and burden experienced in these groups may not be the same, also. Therefore, more support is garnered for examining caregiver stress and burden by race.

The descriptive characteristics of the sample of impaired elderly persons are compared by race in Table 4. Racial differences ($p<.001$) are observed among the impaired elderly persons in marital status, median income, residence and mean number of instrumental activities of daily living difficulties. Most of the impaired elderly white persons are married (54%) and most of their black counterparts are not married (60.1%). The median income of black elders is less than observed among white elderly persons ($7,500 and $9,500, respectively). Most of the white elders live in small towns and rural areas (63.2%) and most of their black counterparts live in large cities, suburbs and moderate-sized cities

Table 4. Comparison of Impaired Elderly Person Characteristics by Race[a]

Variables	Caregivers		x^2 Probability or Probability of t
	White	Black	
Gender			p=.52
Male	39.6	42.1	
Female	60.4	57.9	
Marital Status			p<.001
Married	54.0	39.9	
Not Married	46.0	60.1	
Age Groups			p<.43[b]
65-74	43.0	50.3	
75-79	20.6	13.6	
80-84	17.2	13.1	
85+	19.2	23.0	
Income (median category)	$9,500	$7,500	p<.001[b]
Residence			p<.001[b]
Rural area (open country or farm)	21.9	15.3	
Small town of <50,000 population	41.3	26.8	
City of 50,000-250,000 population	17.1	25.7	
Large city of >250,000 population and suburb	19.7	32.2	
Health			p=.26
Good or better	30.3	26.2	
Less than good	69.7	73.8	
ADL Difficulties (mean value)	2.3	2.6	p=.12
IADL Difficulties (mean value)	4.4	5.0	p<.001
Cognitive/Behavior Problems[c] (mean value)	1.4	1.5	p=.78
Acts of reciprocity from elderly person to caregiver[d] (mean value)	1.9	2.0	p=.78
N	1,178	183	

[a] Source: 1982 National Longterm Care Survey
[b] z-test based on Wilcoxon test for ordinal categorical variables
[c] For both racial groups, cognitive/behavior problems range from 0 to 4
[d] Acts of reciprocity from elderly person to caregiver range from 0-4 for whites and from 0-5 for blacks

(57.9%). Black elders have more difficulties doing instrumental activities of daily living than white elders (5.0 and 4.4, respectively).

No racial differences are observed in the elderly persons' gender, age groups and health. Females are predominant among white and black impaired elderly persons. The majority of both racial groups are 65-79 years old (black elders = 63.9%, white elders = 63.6%). Also, more elders are in the old-old age group (85 years and greater) than in the 75-79 or 80-84 age groups. Among both racial groups, most caregivers reported impaired elderly persons' health as fair to poor. No racial differences are observed in mean numbers of activity of daily living difficulties, cognitive/behavior problems, and acts of reciprocity that elderly persons provide to caregivers. White and black impaired elderly persons had a mean number of 2.3 and 2.6 activities of daily living difficulties, respectively; 1.4 and 1.5 cognitive/behavioral problems, respectively; and, 1.9 and 2.0 acts of reciprocity, respectively.

Caregiver Stress

The first hypothesis is that caregiver stress is greater among white informal caregivers than among their black counterparts. As shown in Table 5, race is not significantly associated with caregiver stress when other variables are ignored (Model I) or controlled (Model II). Hence, the mean

Table 5: OLS Regression Coefficients of Caregiver Stress on Race Controlling for Exogenous Variables Including Interaction Coefficient[a]

Variables	Model I			Model II			Model III		
	b	SEb	Beta	b	SEb	Beta	b	SEb	Beta
Race	-0.189	.170	-0.027	0.063	.166	0.009	1.142*	.401	0.160
Gender				-0.115	.125	-0.020	-0.143	.124	-0.025
Relationship to Elder (Reference group = Spouse)									
Adult child and Adult child in-law				0.059	.180	0.011	0.126	.179	0.025
Other Relatives and Nonrelatives				0.165	.219	0.025	0.195	.218	0.030
Marital Status				0.132	.156	0.023	0.185	.155	0.033
Age				0.022**	.005	0.135	0.021**	.005	0.129
Income				0.016	.017	0.024	-0.021	.017	-0.031
Employment				0.193	.156	0.030	0.232	.155	0.036
Health				-0.367*	.124	-0.069	-0.324*	.123	-0.061
Household Size				-0.072	.065	-0.028	-0.068	.065	-0.026

Table 5--continued

Variables	Model I b	Model I SEb	Model I Beta	Model II b	Model II SEb	Model II Beta	Model III b	Model III SEb	Model III Beta
Residence (Reference group = Rural Area)									
Small town of <50,000 population				-0.207	.146	-0.039	-0.188	.145	-0.036
City of 50,000-250,000 population				-0.308	.177	-0.046	-0.224	.177	-0.034
Large city of >250,000 population				-0.342	.167	-0.056	-0.244	.167	-0.010
Elder's ADL dependencies				0.099*	.036	0.077	0.097*	.036	0.076
Elder's IADL dependencies				-0.004	.033	-0.004	-0.006	.033	-0.005
Elder's Cognitive/Behavior Problems				0.039	.049	0.020	0.046	.049	0.023
Performance of ADL tasks				-0.149**	.038	-0.107	-0.138**	.038	-0.099
Performance of IADL tasks				-0.023	.024	-0.023	-0.021	.024	-0.021
Constant Supervision				-0.135	.146	-0.024	-0.177	.146	-0.032
Social Activity Limitations				-0.009	.129	-0.002	0.009	.129	0.002
Elder's Health				0.007	.123	0.001	0.014	.123	0.003

Table 5--continued

Variables	Model I b	Model I SEb	Model I Beta	Model II b	Model II SEb	Model II Beta	Model III b	Model III SEb	Model III Beta
Elder's Reciprocity				-0.080	.050	-0.037	-0.082	.050	-0.038
Job Conflicts				-0.236	.147	-0.037	-0.244	.146	-0.039
Economic Costs				0.157	.160	0.023	0.120	.160	0.018
Values Caregiving				0.335**	.018	0.404	0.360**	.019	0.433
Social Support				-0.037	.131	-0.007	-0.030	.130	-0.006
Race X Values Caregiving							-0.169**	.053	-0.179
Intercept	4.387**	.065		1.390	.490		1.471*	.492	
R^2	0.001			0.204			0.211		
Adjusted R^2	0.01[E-2b]			0.192			0.198		
F	1.25			17.21**			17.26**		
N	1,775			1,775			1,775		

[a] Source: 1982 National Long-Term Care Survey
[b] E-2 = two additional 0's to right of decimal point (0.0001)
* p<.01
** p<.001

value of caregiver stress does not significantly differ whether the caregiver is white or black.

When an interaction model of race times each of the variables is fitted, a significant interaction between race and values caregiving (Model III) is observed. Therefore, the effect of only one other variable common to both black caregivers and white caregivers differs by race when other variables are controlled. The fitted regression model in Model III is significant ($p<.001$). When adjusted for the degrees of freedom (adjusted R^2), the fitted model explains 19.8% of the variation in caregiver stress.

The significant interaction between race and values caregiving ($p<.001$) shows the effect that values caregiving has on stress is 0.360 ($p<.001$) for white caregivers [$b = (0.360 \times 1) + (-0.169 \times 0 \times 1)$]. The effect that values caregiving has on stress for black caregivers is 0.191 ($p<.001$) [$b = (0.360 \times 1) + (-0.169 \times 1 \times 1)$. So, the effect of values caregiving (i.e., good feelings about giving elder care) on stress is significantly stronger for white caregivers than for black caregivers (see Figure 4). The effect of values caregiving is positive for both racial groups; greater values placed on caregiving increase stress for both white caregivers and black caregivers. Moreover, the effect of valuing caregiving on stress is greater for white caregivers. So, greater values placed on caregiving increase stress more for white persons than for black persons. Therefore, it is

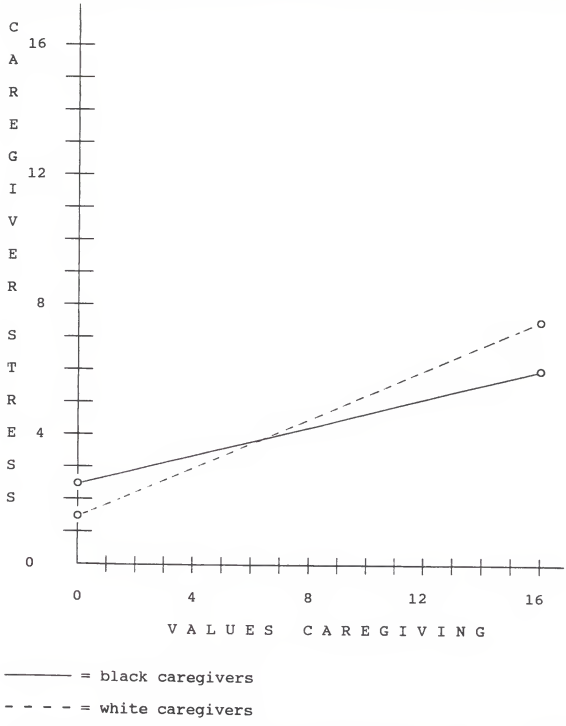


Figure 4. Interaction of Race and Values Caregiving on Caregiver Stress

the effect of valuing caregiving that explains differences in caregiver stress observed between the two race groups and not the effect of race. No race difference is observed in caregiver stress. This finding is inconsistent with the hypothesis that caregiver stress is greater among white caregivers than among black caregivers.

Four other variables, in Model III, that significantly influence caregiver stress for black caregivers and white caregivers alike include the caregiver's age, health, number of activities of daily living that elders have difficulty performing for themselves and number of activities of daily living that caregivers perform for the elders. Caregiver stress is positively associated with the caregiver's age and inversely related to the caregiver's health. So, caregiver stress is greater among older caregivers and caregivers whose health is less than good (i.e., fair to poor health). While caregiver stress is positively associated with the number of activities of daily living that elders have difficulty performing for themselves, it is negatively associated with the number of these activities that caregivers assist elders with. Therefore, caregiver stress is greater among caregivers when elders have more activities of daily living difficulties and caregivers help them with fewer of these activities.

Caregiver Burden

Dimension-Specific Burden

The second hypothesis states that negative changes in both physical health and financial status due to providing elder care are more likely to be observed among black caregivers than among white caregivers. Model I in Table 6 shows the bivariate relationship between the probability of caregivers experiencing negative changes in physical health and race. Race is not significantly associated with the probability of caregivers experiencing negative changes in physical health when other variables are ignored. Hence, the chances of the caregiver having negative changes in physical health due to providing elder care do not differ whether the caregiver is white or black when other variables are ignored.

In the main effects logit model (Model II), negative change in physical health is regressed on race controlling for other variables. The combined effects of the fitted model are significant ($p<.001$). Race, however, is not significant when other variables are controlled. Therefore, black caregivers are no more likely than white caregivers to experience negative changes in physical health due to providing elder care when other social factors are controlled.

The caregiver's gender, relationship to the elder, income, performance of instrumental activities of daily

Table 6. Logit Model for Likelihood that Caregiver Experiences Negative Changes in Physical Health due to Providing Elder Care*

Variable	Model I			Model II		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	-0.176	-0.035	0.84	-0.381	-0.075	0.68
Gender				0.491*	0.122	1.63
Relationship to Elder (Reference group = Spouse)						
Adult child and Adult child in-law				-1.173**	-0.321	0.31
Other Relatives and Nonrelatives				-1.463**	-0.312	0.23
Income				-0.081**	-0.170	0.92
Proximity (Reference group= Coresident)						
Travel time to elder less than or equal to 10 minutes				-0.490	-0.135	0.61
more than 10 minutes to 12 hours				-0.260	-0.043	0.77

Table 6--continued

Variable	Model I b	Model I Beta	Model I Odds Ratio	Model II b	Model II Beta	Model II Odds Ratio
Elder's ADL dependencies				0.056	0.061	1.06
Elder's IADL dependencies				0.088	0.105	1.09
Elder's Cognitive/Behavior Problems				0.551**	0.386	1.74
Performance of ADL tasks				0.031	0.031	1.03
Performance of IADL tasks				0.178**	0.249	1.20
Job Conflicts				0.009	0.002	1.01
Social Support				0.045	0.012	1.05
Intercept	-1.655			-2.919**		
x^2		13.45			279.21	
df		1			14	
-2 Log Likelihood		2466.43			1276.44	
N		1,789			1,789	

[a] Source: 1982 National Longterm Care Survey
* p<.01
** p<.001

living, and the elder's cognitive/behavioral problems are significantly related to the likelihood that the caregiver experiences negative changes in physical health due to providing elder care. Female caregivers are 1.63 times more likely to experience negative changes in physical health than male caregivers. Adult children (and adult children-in-law) are 31% as likely as spouses to experience negative changes in physical health. Also, other relatives (and nonrelatives) are 23% as likely as spouses to experience negative changes in physical health. Thus, spouses are more likely to experience negative changes in physical health due to providing elder care than are adult children and other relatives (and nonrelatives). The probability of experiencing negative changes in physical health decreases at higher levels of income. So, the odds of caregivers experiencing negative changes in physical health decrease by .92 for each additional increase in their income category.[1] The probability of experiencing negative changes in physical health increases as both the number of cognitive/behavior problems of the elder increases and as the number of instrumental activities of daily living tasks that the caregiver provides increases. Therefore, the odds of caregivers experiencing negative

[1] Income categories increase, as follows, by: (a) $1,000 for incomes ranging from $3,000-10,000; (b) $2,000 from $10,000-12,000; (c) $3,000 from $12,000-15,000; (d) $5,000 for incomes ranging from $15,000-30,000; and (e) $10,000 for incomes ranging from $30,000-50,000 (United States Bureau of the Census, 1984)

1.20 times higher for each additional instrumental activity of daily living task that caregivers perform.

No significant interaction term is observed in fitting a second-order interaction logit model including race times each of the variables. Given the aforementioned findings of no racial differences, then the first part of hypothesis two, that negative changes in physical health are more likely observed among black than white caregivers, is rejected.

The second part of hypothesis two addresses the likelihood that negative changes in financial status (i.e. giving elder care costs more than they can afford) is more likely observed among black caregivers than among white caregivers. Model I in Table 7 shows the bivariate relationship between the probability of caregivers experiencing negative changes in financial status and race ignoring other variables. Model II shows the probability of caregivers experiencing negative changes in financial status regressed on race controlling for other variables. When other variables are ignored or controlled, race is not significantly associated with negative changes in financial status due to providing elder care. That is, the chances of caregivers having negative changes in financial status due to providing elder care do not differ whether they are white or black when other variables are ignored or controlled.

Table 7. Logit Model for Likelihood that Caregiver Experiences Negative Changes in Financial Status due to Providing Elder Care Including Interaction Coefficient[a]

Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	0.016	0.003	1.02	-0.130	-0.026	0.88	-0.928*	-0.183	0.40
Gender				0.044	0.011	1.05	0.064	0.016	1.07
Relationship to Elder (Reference group = Spouse)									
Adult child and Adult child in-law				-1.338**	-0.367	0.26	-1.521**	-0.417	0.22
Other Relatives and Nonrelatives				-1.411**	-0.301	0.24	-1.487**	-0.317	0.23
Income				-0.096**	-0.202	0.91	-0.096**	-0.201	0.91
Proximity (Reference Group=Coresident)									
Travel time to elder less than or equal to 10 minutes				-0.522	-0.144	0.59	-0.512	-0.141	0.60
more than 10 minutes to 12 hours				-0.178	-0.030	0.84	-0.151	-0.025	0.86

Table 7--continued

Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Elder's ADL dependencies				0.008	0.008	1.01	-0.002	-0.002	1.00
Elder's IADL dependencies				0.003	0.004	1.00	0.011	0.013	1.08
Elder's Cognitive/Behavior Problems				0.452**	0.316	1.57	0.450**	0.315	1.57
Performance of ADL tasks				0.081	0.081	1.08	0.079	0.079	1.08
Performance of IADL tasks				0.192**	0.268	1.21	0.193**	0.270	1.21
Job Conflicts				0.687**	0.152	1.99	0.702**	0.156	2.02
Social Support				0.212	0.056	1.24	0.211	0.055	1.24
Race X Relationship to Elder (Reference group = Spouse)									
Race X Adult child and Adult child in-law							1.345*	0.184	3.84
Race X Other relatives and nonrelatives							0.797	0.094	2.22

Table 7--continued

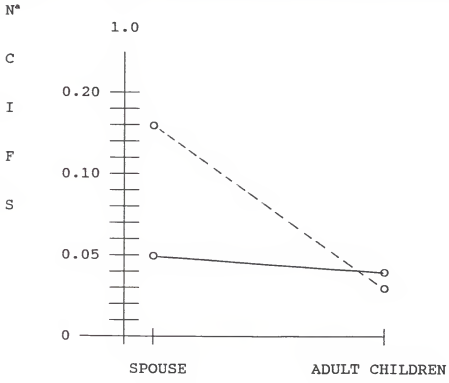
Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Intercept	-1.617**			-2.060**			-2.025**		
x^2	0.008			260.23			469.18		
df	1			15			16		
-2 Log Likelihood	1608.34			1348.11			1339.17		
N	1,789			1,789			1,789		

[a] Source: 1982 National Long-Term Care Survey
* p<.01
** p<.001

Model III shows the probability of caregivers experiencing negative changes in financial status regressed on race controlling for other variables including a significant interaction term. The combined effects of the fitted interaction model are significant ($p<.001$). Therefore, the caregiver's relation to the elder as an adult child (and child-in-law) has a moderating effect on the association between race and negative changes in financial status.

The effect of adult child relationship to elder on the odds of experiencing negative changes in financial status is -1.521 ($p<.001$) for white caregivers [b = (-1.521 x 1) + (-1.487 x 0) + (1.345 x 0 x 1) + (0.797 x 0 x 0)]. For black caregivers, the effect of adult child relationship to elder on the odds of experiencing negative change in financial status is -0.176 ($p<.01$) [b = (-1.521 x 1) + (-1.487 x 0) + (1.345 x 1 x 1) + (0.797 x 1 x 0)]. So, the effect of being an adult child caregiver on the probability of experiencing negative changes in financial status is significantly stronger for white caregivers than for blacks.

Figure 5 shows that the odds of adult children caregivers experiencing negative changes in financial status when they are white is 0.029 [b = -2.025 + (-0.928 x 0) + (-1.521 x 1) + (-1.487 x 0) + (1.345 x 0 x 1) + (0.797 x 0 x 0)] = -3.546; odds ratio = 0.029]. The odds of white spouse caregivers experiencing these negative changes is 0.132 [b = -2.025 + (-0.928 x 0) + (-1.521 x 0) + (-1.487 x 0) + (1.345 x 0 x 0)



* NCIFS= (Probability of) Negative Changes in Financial Status

Figure 5. Interaction of Race and Relationship to Elder on the Probability of Experiencing Negative Changes in Financial Status

+ (0.797 x 0 x 0)] = -2.025; odds ratio = 0.132]. For black caregivers, the odds of adult children experiencing negative changes in financial status is 0.044 [b = -2.025 + (-0.928 x 1) + (-1.521 x 1) + (-1.487 x 0) + (1.345 x 1 x 1) + (0.797 x 0 x 0)] = -3.129; odds ratio = 0.044]. The odds of black spouse caregivers experiencing these negative changes is 0.052 [b = -2.025 + (-0.928 x 1) + (-1.521 x 0) + (-1.487 x 0) + (1.345 x 1 x 0) + (0.797 x 1 x 0)] = -2.935; odds ratio = 0.052]. In general, adult children are less likely than spouses to experience negative changes in financial status. Yet, black adult children are 1.52 times [0.044/0.029] as likely as white adult children to experience these negative changes. Therefore, the second part of hypothesis three, that negative changes in financial status are more likely observed among black caregivers than among white caregivers, is supported when the caregivers are adult children. However, when the caregivers are spouses then the findings are in the opposite direction and the hypothesis is rejected.

The caregiver's income, performance of instrumental activities of daily living tasks, job conflicts and the elder's cognitive/behavior problems are also significantly associated with the probability of the caregiver experiencing negative changes in financial status due to providing elder care. The probability of experiencing negative changes in financial status decreases at higher levels of income. So, the odds of caregivers experiencing negative changes in

financial status is .91 times lower for each unit increase in income that they have. The probability of experiencing negative changes in financial status increases as (a) the number of elders' cognitive/behavior problems increases, (b) the number of instrumental activities of daily living tasks performed by caregivers increases, and (c) the number of job conflicts experienced by the caregiver increases. The odds of a caregiver experiencing negative changes in financial status are 1.57 times higher for each additional cognitive/behavior problem that the elder has. Also, the odds are 1.21 times higher for each additional instrumental activity of daily living task performed by the caregiver. Furthermore, caregivers with job conflicts due to providing elder care are 2.02 times as likely as those with no job conflicts to have negative changes in financial status.

Hypothesis three proposes that giving elder care when not well enough, giving constant attention to elders, negative changes in mental health and limited participation in social activities are all more likely to be observed among white caregivers than among black caregivers.

Model I in Table 8 shows the logit model of the bivariate relationship of race and the likelihood of caregivers having to provide elder care when they are not well enough. Race, ignoring other variables, is not significantly associated with the probability that caregivers have to provide elder care when they are not well enough. Hence, the probability of

Table 8. Logit Model for Likelihood that Caregiver Has To Provide Elder Care When Not Well Enough*

Variable	Model I			Model II		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	0.095	0.019	1.10	-0.047	-0.009	0.95
Gender				0.723**	0.180	2.06
Relationship to Elder (Reference group = Spouse)						
Adult child and Adult child-in-law				-0.762**	-0.209	0.47
Other Relatives and Nonrelatives				-1.042**	-0.222	0.35
Income				-0.088**	-0.186	0.92
Proximity (Reference group= Coresident)						
Travel time to elder less than or equal to 10 minutes				0.059	0.016	1.06
more than 10 minutes to 12 hours				-0.361	-0.060	0.70
Elder's ADL dependencies				0.019	0.021	1.02

Table 8--continued

Variable	Model I b	Model I Beta	Model I Odds Ratio	Model II b	Model II Beta	Model II Odds Ratio
Elder's IADL dependencies				0.096*	0.114	1.10
Elder's Cognitive/Behavior Problems				0.517**	0.361	1.68
Performance of ADL tasks				0.071	0.071	1.07
Performance of IADL tasks				0.175**	0.244	1.19
Job Conflicts				0.171	0.038	1.19
Social Support				-0.204	-0.053	0.82
Intercept	-0.534**			-1.975**		
x^2	0.482			446.53		
df	1			14		
-2 Log Likelihood	2362.60			1916.55		
N	1,789			1,789		

[a] Source: 1982 National Longterm Care Survey
* p<.01
** p<.001

caregivers having to provide elder care when not well enough does not differ whether they are white or black when other variables are ignored.

In the main effects logit model, having to provide elder care when not well enough is regressed on race controlling for other variables (Model II). The combined effects of the fitted model are significant ($p<.001$). However race, controlling for other variables, is not significantly associated with caregivers having to provide elder care when they are not well enough. Therefore, white caregivers are no more likely than black caregivers to have to provide elder care when they are not well enough controlling for other variables; yet, these other variables significantly influence caregivers having to provide elder care when they are not well enough.

Gender and relationship to the elder are significantly associated with the probability that caregivers have to provide elder care when not well enough. Also, the probability of this dimension-specific burden is inversely related to income ($p<.001$) and positively associated with the number of elders' instrumental activities of daily living difficulties ($p<.01$), cognitive/behavior problems ($p<.001$), and instrumental activities of daily living tasks that caregivers perform ($p<.001$). Female caregivers are 2.06 times more likely than male caregivers to have to provide care when not well enough. Caregivers who are adult children/children

in-law and other relatives/nonrelatives are 47% and 35%, respectively, as likely as spouses to have to provide care when they are not well enough. The probability of having to provide care when not well enough decreases at higher levels of income. So, the odds of caregivers having to provide care when they are not well enough is .92 times lower for each additional increase in their income category. The odds of caregivers having to provide care when they are not well enough are only 1.10 times higher for each additional difficulty that elders have in performing their own instrumental activities of daily living. Also, the odds are 1.68 times higher for each additional cognitive/behavior problem that the elders have. Further, the odds are 1.19 times higher for each additional instrumental activities of daily living tasks that caregivers perform.

No significant interaction term is observed in fitting a second-order interaction logit model including race times each of the variables. Therefore, given the aforementioned findings of no racial differences, then the first part of hypothesis four (that giving elder care when not well enough is more likely observed among white than black caregivers) is rejected.

The second part of hypothesis three states that giving constant attention to elders is more likely observed among white caregivers than among black caregivers. The bivariate relationship between the probability that the caregiver has to

provide constant attention to the elder and race is shown in Model I of Table 9. Race, ignoring other variables, is not significantly associated with the probability that the caregiver has to provide constant attention to the elder. Thus, the probability that the caregiver has to provide constant attention to the elder does not differ whether the caregiver is white or black.

In the main effects logit model, having to provide constant attention to the elder is regressed on race controlling for other variables (Model II). The combined effects of the fitted model are significant ($p<.001$). Here, race becomes significant ($p<.001$), also. The emergence of the association between providing constant attention and race when other variables are introduced in the model indicates a suppressor effect. Model II shows that black caregivers are 49% as likely as white caregivers to have to provide constant attention to the elder. Therefore, the finding that white caregivers are more likely than black caregivers to have to provide constant attention is as hypothesized when other variables are controlled.

The probability that the caregiver has to provide constant attention to the elder is significantly associated also with gender, inversely associated with income, and positively associated with the numbers of instrumental activities of daily living difficulties of the elder, cognitive/behavior problems of the elder, and both activities

Table 9. Logit Model for Likelihood that Caregiver Has To Provide Constant Attention to Elder*

Variables	Model I			Model II		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	-0.300	-0.059	0.79	-0.710**	-0.140	0.49
Gender				0.088	0.022	1.09
Relationship to Elder (Reference group = Spouse)						
Adult child and Adult child-in-law				-1.004**	-0.275	0.37
Other Relatives and Nonrelatives				-1.187**	-0.253	0.35
Income				-0.057**	-0.120	0.95
Proximity (Reference group= Coresident)						
Travel time to elder less than or equal to 10 minutes				-0.307	-0.085	0.74
more than 10 minutes to 12 hours				-0.440	-0.073	0.64
Elder's ADL dependencies				0.006	0.006	1.01
Elder's IADL dependencies				0.147**	0.175	1.16

Table 9--continued

Variables	Model I			Model II		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Elder's Cognitive/Behavior Problems				0.572**	0.400	1.77
Performance of ADL tasks				0.333**	0.334	1.40
Performance of IADL tasks				0.207**	0.289	1.23
Job Conflicts				0.007	0.002	1.01
Social Support				0.105	0.028	1.11
Intercept	-0.799**			-3.050**		
x^2	4.057			574.02		
df	1			14		
-2 Log Likelihood	2185.50			1615.53		
N	1,789			1,789		

[a] Source: 1982 National Longterm Care Survey
* p<.01
** p<.001

and instrumental activities of daily living tasks performed by the caregiver. Caregivers who are adult children/children-in-law and other relatives/nonrelatives are 37% and 35%, respectively, as likely as spouses to have to provide constant attention. The probability of having to provide constant attention decreases at higher levels of income. So, the odds of caregivers having to provide constant attention is .95 times lower for each increase in their income category. The odds of caregivers having to provide constant attention to elders are 1.16 times higher for each additional instrumental activity of daily living dependency that elders have. Also, the odds are 1.77 times higher for each additional cognitive/behavior problem that elders have. The odds are 1.40 times higher for each additional activity of daily living task that caregivers perform. Further, the odds are 1.23 times higher for each additional instrumental activity of daily living task that caregivers perform.

No significant interaction term is observed in fitting a second-order interaction logit model including race times each of the variables. So, the findings of racial differences observed in the main effects model support the hypothesis that giving constant attention to elders is more likely observed among white than black caregivers.

The third part of hypothesis three states that negative changes in mental health (i.e., giving care is emotionally hard on caregivers) are more likely observed among white

caregivers than among black caregivers. The bivariate relationship between negative changes in mental health and race is shown in Model I of Table 10. Race is significantly associated ($p<.001$) with the probability that caregivers experience negative changes in mental health when other variables are ignored. Black caregivers are 65% as likely as white caregivers to experience negative changes in mental health due to providing elder care when no other social factors are considered. Thus, the hypothesized relationship is observed when other variables are ignored.

Model II shows the likelihood of caregivers experiencing negative changes in mental health regressed on race controlling for other variables. In this main effects model, race is also significantly ($p<.001$) associated with the probability of having negative changes in mental health when other factors are controlled. Here, black caregivers are 50% as likely as white caregivers to experience these negative changes. This finding, similar to the preceding finding, is consistent with the hypothesis.

Model III shows the likelihood of caregivers experiencing negative changes in mental health regressed on race controlling for other variables including a significant interaction term. The combined effects of the fitted interaction model are significant ($p<.001$). The multiplicative effect of race and social support (i.e., any type of regular help) is significantly associated ($p<.01$) with

Table 10. Logit Model for Likelihood that Caregiver Experiences Negative Changes in Mental (Emotional) Health due to Providing Elder Care Including Interaction Coefficient[a]

Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	-0.433**	-0.085	0.65	-0.686**	-0.135	0.50	-0.067	-0.013	0.94
Gender				0.597**	0.149	1.82	0.603**	0.150	1.83
Relationship to Elder (Reference group = Spouse)									
Adult child and Adult child in-law				-0.791**	-0.217	0.45	-0.811**	-0.222	0.44
Other Relatives and Nonrelatives				-0.740**	-0.158	0.48	-0.762**	-0.162	0.47
Income				-0.017	-0.035	0.98	-0.015	-0.032	0.99
Proximity (Reference Group=Coresident)									
Travel time to elder less than or equal to 10 minutes				-0.203	-0.056	0.82	-0.228	-0.063	0.80
more than 10 minutes to 12 hours				-0.170	-0.028	0.84	-0.171	-0.028	0.84
Elder's ADL dependencies				0.024	0.027	1.03	0.030	0.032	1.03

Table 10--continued

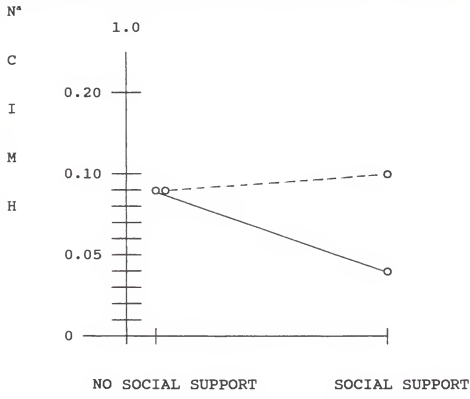
Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Elder's IADL dependencies				0.060	0.071	1.06	0.552	0.066	1.06
Elder's Cognitive/Behavior Problems				0.685**	0.479	1.98	0.687**	0.480	1.99
Performance of ADL tasks				0.039	0.039	1.04	0.044	0.044	1.05
Performance of IADL tasks				0.193**	0.268	1.21	0.191**	0.267	1.21
Job Conflicts				0.147	0.033	1.16	0.137	0.030	1.15
Social Support				-0.041	-0.011	0.96	0.069	0.018	1.07
Race X Social Support							-0.890*	-0.153	0.41
Intercept	-0.266**			-2.311			-2.373**		
x^2	9.91			481.86			488.72		
df	1			14			15		
-2 Log Likelihood	2422.62			1950.68			1944.32		
N	1,789			1,789			1,789		

[a] Source: 1982 National Long-Term Care Survey
* p<.01 ** p<.001

the probability that caregivers experience negative changes in mental health.

The effect of social support on the odds of experiencing negative changes in mental health for black caregivers is -0.821 and significant ($p<.01$) [b = (0.069 x 1) + (-0.890 x 1 x 1)]. For white caregivers, the effect of social support on the odds of experiencing negative change in mental health is 0.069 and not significant [b = (0.069 x 1) + (-0.890 x 0 x 1)]. So, the effect of social support on the probability of experiencing negative changes in mental health is stronger, negative and significant for black caregivers. Social support has no significant effect for white caregivers on the probability of experiencing negative changes in mental health.

Figure 6 shows the odds of experiencing negative changes in mental health for black caregivers with social support are 0.038 [b = (-2.373 + (-0.067 x 1)) + ((0.069 x 1) + (-0.890 x 1 x 1))] = -3.261; odds ratio of -3.261 = 0.038]. The odds of experiencing these negative changes for white caregivers with social support are 0.10 [b = (-2.373 + (-0.067 x 0)) + ((0.069 x 1) + (-0.890 x 0 x 1))] = -2.304; odds ratio of -2.304 = 0.10]. For black caregivers with no social support, the odds of experiencing negative changes in mental health are 0.087 [b = (-2.373 + (-0.067 x 1)) + ((0.069 x 0) + (-0.890 x 1 x 0))] = -2.440; odds ratio of -2.440 = 0.087]. For white caregivers with no social support, the odds of experiencing these negative changes are 0.093 [b = (-2.373 + (-0.067 x 0))



[a] NCIMH= (Probability of) Negative Changes in Mental Health

Figure 6. Interaction of Race and Social Support on the Probability of Experiencing Negative Changes in Mental Health

+ ({0.069 x 0) + (-0.890 x 0 x 0))] = -2.373; odds ratio = 0.093]. Thus, black caregivers with social support are 38% [0.038/0.10] as likely as white caregivers with social support to experience these negative changes. Therefore, the hypothesis that negative changes in mental health are more likely observed among white caregivers than black caregivers is supported; moreover, social support decreases the probability of having negative changes in mental health for black caregivers more than it does for white caregivers.

Additionally, in the interaction model (Model III), the probability that caregivers experience negative changes in mental health is associated with gender and relationship to the elder, and is positively associated with the number of elders' cognitive/behavior problems as well as the number of instrumental activities of daily living tasks performed by caregivers. Female caregivers are 1.83 times more likely than male caregivers to experience negative changes in mental health due to caregiving. Adult children/children-in-law and other relatives/nonrelatives are 44% and 47%, respectively, as likely as spouses to experience negative changes in mental health. The odds of caregivers having negative changes in mental health are 1.99 times higher for each additional cognitive/behavior problem that the elder has. Also, the odds are 1.21 times higher for each additional instrumental activity of daily living task that caregivers perform.

The fourth and last part of the third hypothesis deals with the probability that limited participation in social activities due to giving elder care is more likely observed among white caregivers than among black caregivers. The bivariate relationship between limited social activity participation and race is shown in Model I of Table 11. Race is significantly associated ($p<.001$) with the probability that the caregiver experiences limited participation in social activities when other variables are ignored. Black caregivers are 61% as likely as white caregivers to have limited social activity participation due to providing elder care when no other social factors are considered. Ignoring other factors, the hypothesis is supported.

The main effects model (Model II) shows the probability of experiencing social activity limitations when other variables are controlled. Race continues to be significantly ($p<.001$) associated with social activity limitations. Black caregivers are 49% as likely as white caregivers to experience limited participation in social activities when other factors are considered. This finding is as hypothesized controlling other factors.

Model III shows the probability of caregivers having limited social activity participation regressed on race controlling for other variables including the significant interaction term. The combined effects of the fitted interaction model are significant ($p<.001$). The interaction

Table 11. Logit Model for Likelihood that Caregiver Experiences Limited Participation in Social Activities due to Providing Elder Care Including Interaction Coefficient[a]

Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Race	0.491**	-0.097	0.61	-0.724**	-0.142	0.49	0.288	0.057	1.33
Gender				0.498**	0.124	1.65	0.511**	0.127	1.67
Relationship to Elder (Reference group = Spouse)									
Adult child and Adult child in-law				-0.416	-0.114	0.66	-0.435	-0.119	0.65
Other Relatives and Nonrelatives				-0.734**	-0.156	0.48	-0.750**	-0.160	0.47
Income				0.033	0.069	1.03	0.035	0.073	1.04
Proximity (Reference Group=Coresident)									
Travel time to elder less than or equal to 10 minutes				-0.668**	-0.184	0.51	-0.687**	-0.189	0.50
more than 10 minutes to 12 hours				-0.814**	-0.136	0.44	-0.857**	-0.143	0.43
Elder's ADL dependencies				0.021	0.023	1.02	0.020	0.022	1.02

Table 11--Continued

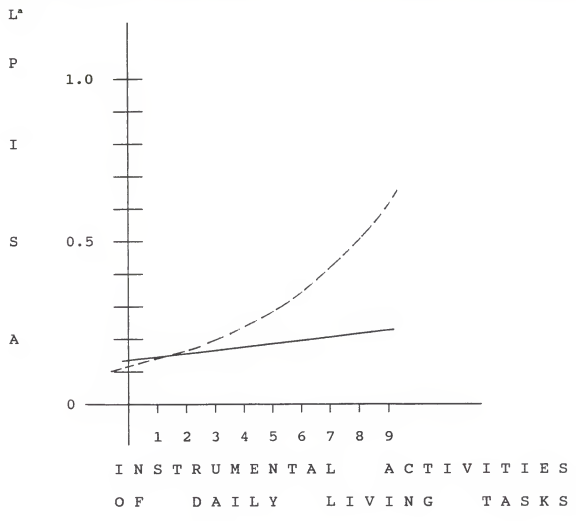
Variables	Model I			Model II			Model III		
	b	Beta	Odds Ratio	b	Beta	Odds Ratio	b	Beta	Odds Ratio
Elder's IADL dependencies				0.088*	0.104	1.11	0.086*	0.102	1.09
Elder's Cognitive/Behavior Problems				0.487**	0.341	1.63	0.487**	0.341	1.63
Performance of ADL tasks				0.103**	0.104	1.11	0.106*	0.106	1.11
Performance of IADL tasks				0.188**	0.262	1.21	0.214**	0.300	1.24
Job Conflicts				0.692**	0.153	2.00	0.707**	0.157	2.03
Social Support				-0.016	-0.004	0.98	-0.013	-0.003	0.99
Race X Performance of IADL tasks							-0.190*	-0.217	0.83
Intercept	0.051**			-2.219**			-2.349**		
x^2	13.45			481.39			490.08		
df	1			14			15		
-2 Log Likelihood	2466.43			1998.49			1989.80		
N	1,789			1,789			1,789		

[a] Source: 1982 National Long-Term Care Survey
* p<.01 ** p<.001

of race and performance of instrumental activities of daily living (IADL) tasks is significantly associated ($p<.01$) with the probability that caregivers have limited participation in social activities. Therefore, the moderating effect of race changes the association of instrumental activities of daily living and limited social activity participation.

The effect of performing instrumental activities of daily living (IADL) on the probability of caregivers having limited social activity participation for whites is 0.214 x the number of IADL tasks ($p<.001$) [b = (0.214 x the number of IADL tasks) + (-0.190 x 0 x the number of IADL tasks]. For black caregivers, the effect of performing instrumental activities of daily living on the probability of having limited social activity participation is 0.024 x the number of IADL tasks ($p<.01$) [b = (0.214 x the number of IADL tasks) + (-0.190 x 1 x the number of IADL tasks].

Figure 7 depicts two findings related to fitting the logit model for the interaction term. First, the effects for both groups are positive. Thus, in general, the probability of caregivers experiencing limited social activity participation is likely to increase for each additional instrumental activity of daily living task they perform. Next, the effect of performing instrumental activities of daily living tasks is significantly stronger for white caregivers than for black caregivers. For white caregivers, the odds of experiencing limited social activity participation



[a] LPISA= (Probability of) Limited Participation In Social Activities

Figure 7. Interaction of Race and Caregiver Involvement in Instrumental Activities of Daily Living Tasks on the Probability of Experiencing Limited Participation in Social Activities

increases by 0.214 for each additional instrumental of daily living task performed. For black caregivers, the odds of experiencing limited social activity participation increases by 0.024 for each additional instrumental of daily living task performed. So, limited participation in social activities is more likely observed among white caregivers than among black caregivers as the number of instrumental activities of daily living increases. Therefore, the hypothesis that limited participation in social activities is more likely observed among white caregivers than among black caregivers is supported at higher numbers of instrumental activities of daily living tasks.

In the interaction model, the probability that caregivers have limited participation in social activities is also associated with gender, relationship to elders and proximity. Additionally, having limited social activity participation is positively associated with elders' instrumental activities of daily living dependencies and cognitive/behavior problems, as well as caregivers' job conflicts and performance of activities of daily living tasks. Female caregivers are 1.33 times as likely as male caregivers to experience limited participation in social activities due to giving elder care. Other relatives (and nonrelatives) are 47% as likely as spouses to experience this phenomenon. The odds of experiencing limited participation in social activities for caregivers who live less than or 10 minutes away from impaired elders and those

who live more than 10 minutes to 12 hours away are 50% and 43%, respectively, as likely as caregivers who coreside with impaired elders. The odds of caregivers experiencing limited participation in social activities are 1.09 times higher for each additional difficulty that elders have in performing their instrumental activities of daily living. Also, the odds are 1.63 times higher for each additional cognitive/behavior problem that elders have. Caregivers with job conflicts are 2.03 times as likely as those with no job conflicts to experience limited social activity participation. Further, the odds are 1.11 times higher for each additional activity of daily living task that caregivers perform.

Overall Burden

The fourth hypothesis is that overall caregiver burden is greater among white caregivers than among black caregivers. The bivariate relationship of caregiver burden and race (shown in Model I of Table 12) indicates that race is significantly associated with burden ($p<.01$) when other variables are ignored. The significant association between race and burden is even greater ($p<.001$) when other factors are controlled (Model II). Thus, the mean value of burden is significantly greater among white caregivers than among black caregivers whether or not social factors are considered. In the main effects model (Model II), the increased significance in the

Table 12. OLS Regression Coefficients of Caregiver Burden on Race and Controlling for Exogenous Variables Including Interaction Coefficient[a]

Variables	Model I			Model II			Model III		
	b	SEb	Beta	b	SEb	Beta	b	SEb	Beta
Race	-0.281*	.119	-0.056	-0.401**	.094	-0.080	-0.712*	.181	-0.142
Gender				0.394**	.073	0.099	0.395**	.073	0.100
Relationship to Elder (Reference group = Spouse)									
Adult child and Adult child in-law				-0.817**	.111	-0.227	-0.868**	.114	-0.241
Other Relatives and Nonrelatives				-0.927**	.119	-0.200	-0.910**	.128	-0.196
Income				-0.036**	.009	-0.077	-0.040**	.009	-0.085
Proximity (Reference Group=Coresident)									
Travel time to elder less than or equal to 10 minutes				-0.259*	.098	-0.072	-0.245*	.098	-0.068
more than 10 minutes to 12 hours				-0.326*	.116	-0.055	-0.320*	.115	-0.054
Elder's ADL dependencies				0.018	.021	0.020	0.015	.021	0.017
Elder's IADL dependencies				0.078**	.019	0.094	0.081**	.019	0.098
Elder's Cognitive/Behavior Problems				0.560**	.027	0.396	0.557**	.027	0.394
Performance of ADL tasks				0.110**	.022	0.112	0.108**	.022	0.109

Table 12--continued

Variables	Model I b	Model I SEb	Model I Beta	Model II b	Model II SEb	Model II Beta	Model III b	Model III SEb	Model III Beta
Performance of IADL tasks				0.178**	.014	0.252	0.179**	.014	0.254
Job Conflicts				0.255*	.083	0.057	0.263**	.083	0.059
Social Support				-0.031^{E-2b}	.077	-0.082^{E-3}	-0.081^{E-3}	.077	-0.022^{E-3}
Race X Relationship to Elder (Reference group = Spouse)									
Race X Adult child and Adult child in-law							0.541*	.226	0.075
Race X Other relatives and nonrelatives							0.172	.248	0.021
Intercept	1.953**	.046		0.361	.167		0.402*	.167	
R^2	0.003			0.427			0.430		
Adjusted R^2	0.003			0.423			0.425		
F	5.62*			94.44**			83.66**		
N	1,789			1,789			1,789		

[a] Source: 1982 National Long-Term Care Survey

[b] E-2 = the number of 0's to right of decimal point (-0.00031)

* p<.01

** p<.001

association between race and burden signifies that a suppressor effect is exerted by other variables in the model.

The fitting of a second-order interaction model (Model III) in which caregiver burden is regressed on race controlling for other variables, and including race times each of the variables produces significant findings among several of the covariates and one significant interaction term. The fitted model explains 42.5% (adjusted R^2) of the variation in caregiver burden and is significant ($p<.001$). The caregiver's relationship to the elder, as an adult child (and child-in-law), is the only variable common to both racial groups that differs by race ($p<.01$) in its effect on burden.

The effect of being an adult child caregiver on burden is -0.868 ($p<.001$) for white caregivers [b = (-0.868 x 1) + (-0.910 x 0) + (0.541 x 0 x 1) + (0.172 x 0 x 0)]. For black caregivers, the effect of being an adult child caregiver on burden is -0.327 ($p<.01$) [b = (-0.868 x 1) + (-0.910 x 0) + (0.541 x 1 x 1) + (0.172 x 1 x 0)]. Therefore, the negative effect of being an adult child caregiver on burden is significant and stronger for whites than for blacks (see Figure 8). Consequently, the hypothesis is supported that overall caregiver burden is greater among white caregivers than among black caregivers.

In general, given that the effects of being an adult child on caregiver burden is negative for both racial groups, burden is greater among caregivers who are spouses and lower

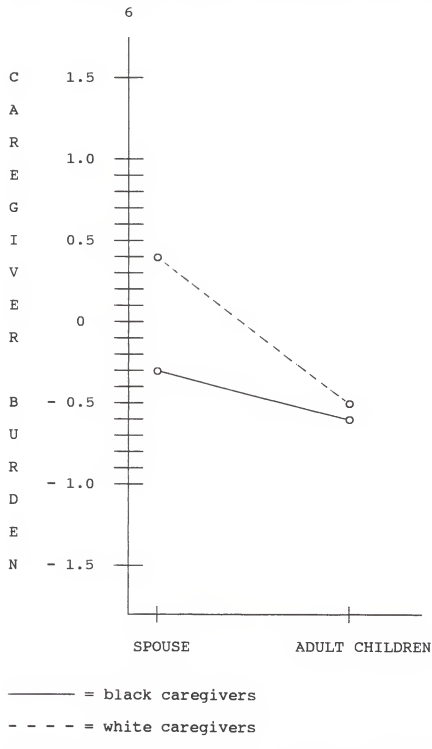


Figure 8. Interaction of Race and Relationship to Elder on Caregiver Burden

among adult children. Furthermore, the interaction of race and adult child caregiver on burden demonstrates that the magnitude of the difference in burden is relatively large between white and black spouses and notably smaller between white and black adult children.

Eight of the remaining ten variables in the interaction model are significantly related to caregiver burden. The caregiver's gender, performance in both activities and instrumental activities of daily living and job conflicts are positively related to burden and significant at the $p<.001$ level. Also, the elder's difficulties in performing instrumental activities of daily living and cognitive/behavior problems are positively related to burden and significant at the $p<.001$ level. The caregiver's income and proximity to the elderly person are inversely related to burden and significant at $p<.01$. Thus, caregiver burden is greater when the caregiver is white, female, performs more activities and instrumental activities of daily living for the elder, has more job conflicts, has lower income, and lives with the impaired elder. Also, caregiver burden is greater when elders have more difficulties performing instrumental activities of daily living and have more cognitive/behavioral problems.

CHAPTER FIVE
DISCUSSION

Caregiver Stress

According to Pearlin's (1983) role strain theory (a) personal stress is induced when individuals encounter role strains (hardships, challenges, and conflicts or other problems that people experience as they engage over time in normal social roles); (b) normal social roles (spouse, child, female, caregiver) are generally potent sources of stress because people tend to attach considerable importance to their role activities; and (c) by examining social roles as antecedents to stress, we consider the enduring nature of individuals' social conditions as affecting their perceptions, attitudes and behaviors about various experiences they encounter and thereby, may explain differences they have regarding these experiences.

The theoretical orientation underlying Pearlin's role theory is that the social conditions (locations in the social structure) that individuals experience influence their attitudes, perceptions, and behaviors. So, it is logical to surmise that persons occupying lower social locations (of power, prestige, privilege) in the social structure will tend to have greater stress than those in higher social locations

due to recurrent and persistent frustrations over limited and denied opportunities to achieve what is valued in society. Given the aforementioned interpretation, then black caregivers are expected to have more stress than white caregivers. Nonetheless, considering the documented stress-reducing effects of social support and that blacks have more diverse networks of social support than whites, I hypothesized that white caregivers would experience more stress than black caregivers (presumably because they would have less social support than blacks).

The joint effect of race and valuing caregiving is significant in influencing caregiver stress. Hence, it is the effect of valuing caregiving that explains differences in caregiver stress observed between the two race groups. For both race groups, as the value placed on caregiving increases, then so does stress. However, the effect of valuing caregiving on stress is greater for white caregivers. So, greater value placed on caregiving increases stress more for white persons than for black persons. Therefore, no race difference is observed in caregiver stress. This finding is inconsistent with the hypothesis that caregiver stress is greater among white caregivers than among black caregivers.

The basis of the preceding hypothesis is work documenting the stress-reducing effects of social support and that this support is more likely observed among black caregivers than white caregivers. In this sample, although the majority of

white caregivers receive regular social support, black caregivers are more likely than whites to get regular social support. Yet, social support does not moderate the effect of race on stress. Another coping measure, valuing caregiving, moderates the effect of race on stress.

Interestingly, the effect of valuing caregiving increases, rather than decreases, stress. This finding generates two questions that need to be addressed. First, why is a coping strategy (values caregiving) stress-inducing rather than stress-reducing? And second, why are the effects of valuing caregiving stronger on inducing stress for whites than for blacks?

The following two explanations address the first question. The first explanation deals with the stress individuals feel when they have intrapersonal conflicts. We can expect that people generally feel good about helping others. We can, also, expect people not to feel good about performing certain tasks that may be personal in nature, time-consuming, heavy work, or onerous in other ways. Thus, it is probable that more stress is experienced the more an individual values giving elder care if they are uncomfortable performing the needed tasks or find the tasks to be onerous. For example, a caregiver may want (value) to help the elderly person but feel uncomfortable assisting the elder with toileting needs, bathing, transferring from bed to chair, or any of the other areas for which help is needed. Therefore,

the nature of the caregiving tasks may be problematic for those who truly value helping a relative or friend.

The second explanation deals with problems observed with the magnitude scaling measure of stress, in particular, and the magnitude scaling measures of other experiences (including valuing caregiving) in the data. The magnitude scaling technique is considered superior to category scaling measures in the study of social judgements (i.e., opinions) (Lodge 1981; Duncan, 1984; Cross, 1982) because it provides a quantitative measure of phenomena, which in turn offers more information than qualitative measures about the association of factors of interest (i.e., magnitude of the effect of an independent variable on a response variable, the form of the relationship, and a measure of the impact of change on relationships). Despite the advantages of magnitude scaling techniques over category scaling, Schaeffer and Bradburn (1989) found problems with using this measure, particularly to assess stress among informal caregivers in this data set.

According to Schaeffer and Bradburn (1989), magnitude estimation is more difficult for caregivers who are older, less educated and male due to, respectively, poorer physical stamina, difficulty manipulating and estimating numbers, and difficulty consulting an internal continuum. Additionally, respondents who do not bathe the elders (which is the standard for estimating the amount of stress points), and for whom the

question is hypothetical, are more likely than others to answer inappropriately.

Bradburn pointed out that a lot of time was spent developing the measure for stress to ultimately find out that respondents rejected the concept of stress (personal communication, June 17, 1993). The caregivers chose to refer to providing elder care as "hard on me" but not as stress; after all they viewed their actions as "helping" a relative or friend (Bradburn, personal communication, June 17, 1993). Therefore, it is also possible that findings on stress may represent a methodological problem. Valuing caregiving was also measured utilizing magnitude scaling techniques. Thus, the potential exists for findings on valuing caregiving to also represent a methodological problem.

Another way the magnitude scaling measure of stress may possibly limit the findings of the study is in determining factors associated with stress. A relatively small amount of variability in caregiver stress (adjusted R^2 = 19.8%) is explained by the combination of factors included in this study. Evidently, given the representativeness of the sample, there is more to be uncovered regarding influences on caregiver stress among white and black informal caregivers of impaired elders in the United States. Further examination of factors that influence stress is warranted. Perhaps more variability in stress can be explained by a technique that measures components of stress (i.e., anxiety, irascibility,

sleeplessness, depression). Thus, a measure with construct validity may be more useful than one having criterion-based validity.

The second question addresses why the effects of valuing caregiving are stronger on inducing stress for white caregivers than for black caregivers. Again, consideration should be given to the nature of the activities expected and performed in fulfilling the caregiver role.

Performing caregiving activities is analogous to performing work in general, and housework in particular. Housework is defined as "work that must be done to maintain a household, work that someone would have to be hired to do if family members did not do it themselves (Schooler, Kohn, Miller and Miller, 1983, p.243). Similarly, caregiving is work that must be done to maintain the quality, and possibly quantity, of impaired elderly persons' lives; work that someone would have to be hired to do (formal caregivers) if informal caregivers did not do it. Moreover, caregiving, like housework, according to Schooler et al. (1983) has fewer external validations than paid employment (i.e., fewer promotions, profits or pay raises as signs of a job well done).

Studies on work and personality address the effects of social stratification (location in the social structure) on workers' personalities. Findings of these studies show that psychological functioning is related to housework (Schooler et

al., 1983). Specifically, psychological functioning is related to the nature of activities expected and performed by persons fulfilling the houseworker role. Psychological functioning is negatively related to housework that is considered heavy, dirty, routinized, has time pressures to complete and in which individuals believe they are held responsible for things beyond their control (Schooler et al., 1983). Clearly analogies can be drawn to caregiving since it is work that (a) is done repetitively (routinized); (b) potentially can be considered heavy work if elders have several dependencies or combinations of dependencies and cognitive/behavior problems; (c) can be considered dirty since caregivers may need to clean elders (bathe), clean up after elders (toileting, spills), and do cleaning for elders (housework, laundry); (d) may involve time pressures if routine care has to be completed within a specific time frame in order that elders' appointments (i.e., physician visits) can be met or other roles of caregivers can be fulfilled (spouse, parent, employee); and (e) may cause caregivers to feel that others (relatives, health care providers, social workers, onlookers) hold them responsible for complications elders may develop due to the nature of their dependencies (for example, contractures [tightening of tendons causing loss of use of limbs] due to physical disability, skin ulcers due to lack of bladder and bowel control, weight loss due to loss

of appetite, injuries due to falls, mental and physical deterioration due to disease progression).

One aspect of workers' personalities and psychological functioning is self-direction of orientation. Classic work in the area of social structure and personality reflects that differences in individuals' orientations to self and society are based on what they are socialized to value (Kohn, 1959; Kohn and Schooler, 1983). Persons in higher locations in the social structure are socialized to value self-direction. Thus they value internal standards of behavior and their ability and freedom to create, alter, and improve their lives and social environments. Persons in lower social locations are socialized to value conformity. Therefore, they value having externally imposed rules which direct and control their lives and social environments.

Given that white people in America are afforded more power, prestige and privilege than are black people, then they tend to occupy higher locations in the social structure and black people tend to occupy lower social locations. Hence, it can be argued that valuing caregiving induces more stress among white caregivers than among black caregivers, because even though white caregivers feel good about helping elderly persons, their ability and freedom (self-directedness) to appreciably alter and improve the caregiving situation is limited, thereby negatively affecting their psychological functioning. On the other hand, black caregivers may

experience increases in stress the more they value caregiving because the nature of the activities negatively affects their psychological functioning. Yet, greater values placed on caregiving increase stress less for black persons than for white persons because, by being socialized to value conforming to externally imposed rules, black persons (a) accept performing activities that are expected of them and (b) accept the caregiving situation more (i.e., they do not experience the stress related to feelings of inability to alter and improve the caregiving situation).

Therefore, the aforementioned argument supporting the finding that the effects of valuing caregiving is stronger on inducing stress for white caregivers than black caregivers is not counter to the theoretical orientation underlying role strain theory. The social conditions (locations in the social structure) that individuals experience do influence their attitudes, perceptions, and behaviors.

Caregiver Burden

Understanding the preceding discussion on the theoretical orientation of Pearlin's role strain theory is paramount to explaining the following findings on race variations in caregiver burden. Caregiver burden consists of six dimensions that are problems (negative experiences) that caregivers tend to have as a result of fulfilling their role activities. The social locations of these individuals, discussed in the

preceding section, offer plausible explanations of race differences observed in this study.

Dimension-Specific Burden

Have to provide constant attention to elders

Race differences are observed in the probability of caregivers having to provide constant attention to impaired elders. The data show that white caregivers are more likely than black caregivers to feel they have to provide constant attention to elders. This finding is consistent with the hypothesis. The difference observed between white and black caregivers is suppressed by other social factors.

The model of caregiver stress and coping (Pearlin et al., 1989), based on Pearlin's (1983) earlier work in role strain theory, is used in this study as a framework with which to conceptualize overall burden, and subsequently dimension-specific burden. In terms of the role strain theory, factors comprising caregiver characteristics and caregiver role strain are observed to influence this dimension of burden (i.e., caregivers report they have to give elders constant attention).

Race differences in this dimension of burden reflect that social location in the structure of society affects the attitudes and resulting behaviors among individuals in the two race groups. Here, a significantly greater proportion of persons in higher social locations (i.e., white caregivers)

feel they have to give constant attention to impaired elders. This specific dimension of burden is supervisory in nature, wherein persons in higher social locations (presumably expected to be able to manage potentially complex and possibly unpredictable situations) provide vigilance over impaired others. The findings of Schooler et al. (1983) that the substantive complexity of housework is positively related to self-directedness and ideational flexibility[1] support the argument that persons located in higher social locations may value performing this activity.

Earlier in this paper, I argued that social support would influence race differences in the probability of having to give constant attention to elders. This is not observed.

Negative changes in financial status

The joint effect of race and caregivers' relationships to elders influences the probability of caregivers experiencing negative changes in financial status. Thus, the effect of caregivers' relationships to elders explains differences in the probability of caregivers experiencing negative changes in financial status observed between the two race groups. Being an adult child (and child-in-law) increases the probability of having negative changes in financial status due to caregiving more for black persons than for white persons. Being a spouse increases the probability of having negative changes in

[1] Ideational flexibility is described as the intellectual flexibility to problem-solve (use thought and independent judgement) in dealing with people (Schooler et al., 1983).

financial status due to caregiving more for white persons than for black persons. So, no race difference is observed in caregivers experiencing negative changes in financial status due to providing elders care. This finding is inconsistent with the hypothesis that negative changes in financial status are more likely observed among black caregivers than among white caregivers.

The difference in adult children being more likely to have negative financial changes when they are black caregivers is consistent with the hypothesis. This finding is supported by the role strain theory because social characteristics of the caregiver and caregiver role strain influence negative changes in financial status. Black persons, as a collective group, do not have the power, prestige and privilege that is granted to white people in the social structure of America. So white adult children, in the aggregate, tend to have more financial resources than black adult children. Hence, white adult children may not perceive the negative changes in their financial status to be as great as black adult children perceive their changes to be. Therefore, the social characteristics of caregivers represent their locations in the social structure, which affect their attitudes and perceptions, thereby explaining observed differences among adult child caregivers.

Although the difference in spouses being more likely to have negative financial changes when they are white caregivers

is inconsistent with the hypothesis, the social location of individuals also explains why the effects of being a spouse on experiencing negative financial changes is observed more among white caregivers than among blacks. Persons in higher social locations (i.e., white, male) have more opportunities to be employed and to earn higher incomes than persons in lower social positions (i.e., black, female). So, older white persons (i.e., impaired elders and their spouses) probably have become accustomed to lifestyles in which they have enough, if not substantial, financial resources. Likewise, older black persons probably have become accustomed to lifestyles in which they have few, if not meager, financial resources. Given the finding that spouses feel they have negative financial changes more when they are white caregivers than black caregivers, a plausible argument is that the lifestyle to which white spouse caregivers have become accustomed is strained at the least and suffering at the most because of the financial costs of caring for an impaired elderly person (i.e., buying medicine, medical and ancillary services, equipment and supplies). Thus, the white spouse caregivers perceive a considerable negative change in their financial status. This is particularly the case if the impaired elders are white males no longer able to work. It is also plausible that the change in lifestyle among black spouses is not perceived as being as great a change as white spouses feel has occurred in their lifestyles. So, among

black spouse caregivers the perception of having negative financial changes due to caregiving is not as great.

Negative changes in mental health

The effect of social support explains race differences in the probability of caregivers experiencing negative changes in their mental health. Social support decreases the probability of having negative changes in mental health for black caregivers more than it does for white caregivers. Moreover, for white caregivers social support does not significantly influence the probability of their having negative changes in mental health. So, white caregivers are more likely than black caregivers to have negative changes in their mental health. This finding is consistent with the hypothesis. Although Pearlin's (1983) role strain theory posits that blacks (having lower social location in the social structure) are more likely to have negative changes than whites, social support (as hypothesized) has a moderating effect on this phenomenon. Therefore, social support is a resource among individuals who tend to have fewer resources.

The model of Pearlin et al. (1989) depicts social support as a coping measure that reduces role strain and stress. The coping component of Pearlin and his colleagues' model is not included as a separate component in the modified model for burden. However, social support is located in the caregiver role strain component and thereby, is examined as also affecting role strain.

Limited participation in social activities

The effect of caregivers performing instrumental activities of daily living tasks explains race differences in the probability of caregivers having limited participation in social activities due to providing elder care. In general, both black and white caregivers experience limited social activity participation the more tasks they perform. Still, the chance of experiencing this phenomenon is greater for white caregivers than for black caregivers.

This finding is consistent with my hypothesis. According to Pearlin (1989), one type of role strain commonly observed among informal caregivers of elderly persons is role overload. This condition occurs when demands on energy and stamina exceed individuals' capacities. Also, trying to fulfill multiple roles is difficult due to time constraints. Having to perform more instrumental activities of daily living tasks (housework, errands, food preparation, shopping, money management, transporting around town, making telephone calls, transporting outside the house, and errands) appear to limit the participation of white caregivers more than black caregivers. If white caregivers' social positions in the social structure require that they also participate in social activities that are expected of someone in their higher location, then it is logical to find that having to actually perform more elder care tasks can potentially, at the very least, conflict with their social activity participation. At

the worst, performing more elder care tasks can induce role overload (strain) thereby limiting, in this instance, their participation in social activities.

Additionally, it can be speculated that the nature or number, or both of these factors, of caregivers' social activities can provide more information regarding whether or not role overload occurs; however, these data are not examined or available. Given the information examined, Pearlin's premise on social location affecting role strain and my aforementioned extrapolation to these factors influencing burden, seem to offer a plausible explanation of the observed race differences.

Negative changes in physical health and have to give elder care when not well enough

No race differences are observed in the probability of caregivers experiencing negative changes in their physical health or in their perceptions that they have to give elder care when they are not well enough. These findings are inconsistent with the two hypotheses that address these phenomena.

Although, in the hypotheses referred to above, the role strain theory does not apply when the focus is on race explaining observed differences, it is applicable when other social locations in the social structure are considered. For example, lower social locations in both gender and socioeconomic status (measured by income) influence negative

changes in caregivers' physical health and their having to provide elder care when not well enough. Therefore, the only implied revision in the theory is the effect of all lower social positions in social structure (race, gender, social class, age) on caregivers' attitudes do not explain observed differences in all caregiving situations.

Overall Caregiver Burden

The effect of caregivers' relationships to elders explains the race difference in burden. In general, burden is less among adult children for both race groups. However, the effect of being adult children on burden is stronger for white caregivers than for black caregivers. So, a greater decrease in burden is observed when caregivers are white adult children than black adult children, although white caregivers report experiencing more burden than black caregivers both when they are adult children and when they are spouses.

This finding is consistent with the hypothesis that caregiver burden is greater among white caregivers than among black caregivers. Earlier in this paper, I surmised that overall burden (the accumulation of six specific problems) is greater among white caregivers than among black caregivers because whites experience more dimension-specific burden (i.e., hypothesized to experience four of six dimensions of burden). Since whites are observed to experience more

dimension-specific burden, then it is not surprising that they subsequently experience more overall burden.

The usefulness of Pearlin's role strain theory, and the underlying theoretical orientation of social structure and personality, is discussed in the preceding findings of dimension-specific burden. According to the theory, role strains influence negative experiences of caregiving (burden) and social conditions of caregivers influence both role strains and these negative experiences (burden). A moderately large proportion of burden (adjusted R^2 = 42.5%) is explained when the sociodemographic factors comprising the modified model of burden are controlled. Thus the model of Pearlin et al. (1989) is useful in explaining caregiver burden.

Summary and Conclusions

The purpose of this research is to compare by race the predictors of caregiver stress and burden among informal (i.e., unpaid) caregivers to impaired elderly persons. Both stress and burden are viewed as negative sequelae of providing elder care.

Caregiver stress is an insidious and potentially ominous phenomenon that at the very least produces mental and emotional discomfort. By the nature of its definition, stress is capable of not only taxing caregivers' mental and emotional resources but also exceeding them and endangering their mental well-being (Lazarus and Folkman, 1984).

Caregiver burden reflects the accumulation of specific problems in caregivers' lives that they associate with giving elders care. Burden is associated with caregivers' desire and decision to remove the responsibility of directly providing elder care from themselves to an institutional provider (Morycz, 1985; Romeis, 1989; Miller and McFall, 1992).

Specifically, burden is the caregiver's problem and not the problems that the elder has or displays. There are six specific problems (i.e., dimensions of burden) in this research that comprise overall burden. The dimensions of burden are caregivers' perceptions that caring for impaired persons (a) negatively affects their mental health, (b) negatively affects their physical health, (c) limits their participation in social activities, (d) negatively affects their financial status, (e) requires giving elder care when they are not well enough, and (f) necessitates their providing constant attention to impaired elders (Zarit, Todd and Zarit, 1986; Miller, McFall and Montgomery, 1991).

This study of stress and burden shows similarities and differences by race and the conditions under which these findings are observed among caregivers in the United States. Relative to caregiver stress, no race differences are observed in the amount of stress experienced. The findings on stress show that valuing caregiving elicits differences in the amount of stress that is experienced by white caregivers and black caregivers in America. For both black caregivers and white

caregivers, as the value placed on giving elder care increases, then so does stress. Yet, greater values placed on caregiving increase stress more for white caregivers than for black caregivers. Therefore, it is the effect of valuing caregiving that explains differences in stress for both race groups, and not race that explains differences in stress.

Relative to caregiver burden, the findings show race differences in three of six dimensions of burden and in overall (global) burden. White caregivers are more likely than black caregivers to feel they have to provide constant attention to elders. In two of the dimension-specific burdens referred to above and overall burden, race differences are moderated by various social factors.

The effect of social support explains race differences in caregivers' reports of experiencing negative changes in their mental health (i.e., feelings that helping elders is emotionally hard on them). White caregivers are observed to be more likely than black caregivers to have negative changes in their mental health. While social support decreases the probability of having negative changes in mental health for black caregivers, it does not significantly influence the probability of having negative changes in mental health for white caregivers.

The effect of caregivers performing instrumental activities of daily living tasks explains race differences in their perceptions that giving elder care limits their

participation in other social activities. In general, both black caregivers and white caregivers feel the more tasks they perform then the more likely their participation is limited in other social activities. Still, the chance of experiencing this phenomenon is greater for white caregivers than for black caregivers. When more tasks are performed, then white caregivers' participation in other social activities is more likely to be limited than black caregivers' social activity participation.

The effect of caregivers' relationships to elders explains race differences in overall burden. In general, adult children caregivers report they experience less overall burden than spouse caregivers. Yet, the effect of being adult children on burden is stronger for white caregivers than for black caregivers. Therefore, a greater decrease in burden is observed when caregivers are white adult children than black adult children, although white caregivers report experiencing more burden than black caregivers both when they are adult children and when they are spouses.

The difference in another dimension of burden observed between the two race groups is explained by the moderating effect of a social factor other than race. The effect of caregivers' relationships to elders explains differences observed between the two race groups in their experiencing negative changes in financial status. Being an adult child (and child-in-law) increases the probability of having

negative changes in financial status due to caregiving more for black persons than for white persons. Being a spouse increases the probability of having negative changes in financial status due to caregiving more for white persons than for black persons. So, the difference in caregivers experiencing negative changes in financial status due to providing elders care is explained by the caregivers' relationships to elders and is not explained by race.

Finally for the remaining two dimensions of burden, no race differences are observed. White caregivers' perceptions of having negative changes in physical health and of having to give elder care when they are not well enough are no different than black caregivers' perceptions of these experiences.

Social factors, other than those discussed above, that significantly influence stress and burden (i.e., predictors of stress and burden) are the same for both race groups, respectively. Since the focus of this work is on racial variations in stress and burden, then readers are referred to the analyses of the data in order to review the presentation of common predictors of these phenomena.

The role strain theory postulated by Pearlin (1983) and the conceptual model of caregiver stress and coping developed by Pearlin et al. (1989) are useful in explaining caregiver stress and in conceptualizing caregiver burden. Caregiver role strain, role strains in other areas of caregivers' lives that also occur due to caregiving constraints, and coping

mechanisms influence caregiver stress and burden. The theoretical orientation underlying Pearlin's role strain theory is located in work on social structure (social stratification) and personality (Kohn, 1959; Kohn and Schooler, 1983; Schooler, Kohn, Miller and Miller, 1983). According to the role strain theory as utilized in this research, individuals' social conditions are antecedent to both caregiver strains and to caregiver stress and burden. In this study, locations of persons in the social structure affect their attitudes, perceptions and behaviors related to caregiving and explain differences observed between the two races.

A limitation of this study is the measure of stress and of values caregiving. Problems are observed with the use of magnitude scaling techniques to measure these factors in this data set (Schaffer and Bradburn, 1989). Therefore, circumspection should be used in interpreting the findings related to caregiver stress.

Directions for future research in the area of caregiver stress, that we gain from this study, consist of utilizing a measure of stress that has construct validity instead of the criterion-based validity used in this study. The problems of the criterion-based measure of stress appear to be greater than a measure of the components of stress (i.e., anxiety, irascibility, sleeplessness, depression). Nonetheless, the findings in this study shed insight regarding racial

variations in caregiver stress and should therefore be recognized, although prudently, for its contribution to an area in which very little information is known.

Another limitation of this study is that the role strain theory of stress is extrapolated to other negative sequelae of caregiving (i.e., burden). The theory was developed to explain the relationship between role strain and personal stress, not other problems of caregiving.

The findings in this study show that black caregivers, as well as white caregivers, experience stress and burden when they give impaired elderly persons assistance and care. White caregivers, in general, tend to experience more stress and burden than black caregivers; however, both race groups share several social factors in common that increase stress and burden. Therefore, both race groups are at risk for developing caregiver stress and burden, and white caregivers are at greater risks for having these negative experiences.

These findings provide useful information for health care policies that guide practices assisting caregivers to maintain community elder care. The findings identify social factors that both induce and reduce stress and burden among caregivers. This evidence suggests assessing caregivers for the presence of social factors that influence stress and burden can assist providers in recognizing caregivers at risk for these experiences. Subsequently, interventions can be initiated to prevent manifestations of stress (i.e.,

depression, anxiety, sleeplessness) and possibly delay manifestations of burden (i.e., desire and decision to institutionalize elders) given early identification of caregivers at risk for stress and burden.

I agree with Pearlin (1990) that directions for future research include examining the effects of social positions on each component of the caregiver stress and coping model in order to determine the possible origin of influences on role strains, coping measures, stress and burden. Determining the origins of factors that influence stress and burden are just as important as determining intervening factors of these experiences for discovering ways to possibly reduce these negative sequelae of caregiving.

APPENDIX
DISCUSSION OF BUREAU OF THE CENSUS POST-STRATIFICATION TECHNIQUE

According to the United States Bureau of the Census (1984), Type A noninterviews were encountered during the Long Term Care Survey. Type A noninterviews consisted of persons who, (a) refused to be interviewed, (b) could not be found or contacted, (c) could not respond to interview questions, or (d) either died, were institutionalized, or relocated outside of the United States after April 1, 1982. In other words, Type A noninterviews belonged to the Long Term Care Survey universe, were missed by the sampling frame and were therefore adjusted for by the following post-stratification technique used during the screening of impaired elders in the sample.

Each screened elder's weight was adjusted to account for type A noninterviews. The adjustment was done by cells that were defined, and stratified, by age, original reason for medicare entitlement, and Long Term Care Survey primary sampling unit.

In the first stage of adjustment, a ratio estimate factor (according to the Census region, whether an elder lived in a Standard Metropolitan Statistical Area, and age) was applied to the weight of each elder in the Long Term Care Survey nonself-representing primary sampling unit. The application

of the ratio estimate factor was done to account for the Long Term Care Survey nonself-representing primary sampling units that did not have population distributions identical to those of the strata from which they were selected.

In the second, and last, stage of adjustment, each screened elder received a second ratio estimate factor causing the weighted number of the sample persons to agree (by age, sex, and race) with independent estimates of the total civilian noninstitutional population of the United States on August 1, 1982. These independent estimates were derived from the 1980 Census of Population and were adjusted for population changes between April 1,1980 (Census Day) and August 1, 1982.

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BIOGRAPHICAL SKETCH

Gloria Janice Allen was born on January 21st in Gainesville, Florida. She was reared in Thomasville, Georgia, where she spent the formative years of her life. In 1975, she received a Bachelor of Science in Nursing degree from the University of Florida in Gainesville, Florida.

After receiving her B.S.N. degree, she began her nursing career at the Veterans Administration Medical Center in Gainesville, Florida. There she practiced as a staff nurse, charge nurse and diabetic teaching nurse. She returned to graduate study in 1979 and was conferred the Master of Science in Nursing degree with a clinical specialty in adult health/medical surgical nursing and a functional specialty in nursing administration in 1981. After receiving her M.S.N. degree, she served as a consultant to the Vice-President for Nursing and Patient Services at Shands Regional Medical Center. There she conducted hospital-wide patient acuity studies to be included in accreditation processes. Upon completion of this project, she accepted the position of Director of Nursing for Medical/Surgical Units at Thomas Hospital in South Charleston, West Virginia.

It was during her administrative tenure that she had the opportunity to guest lecture at West Virginia University in

the South Charleston location. These experiences stimulated her desire to share knowledge and vision of a better system of health care through teaching and research. She consequently joined the faculty of the College of Nursing at the University of Florida.

Her research interests in the mental health and well-being of African-Americans led her to return to doctoral studies in medical sociology in the Department of Sociology at the University of Florida. There she developed a research agenda studying mental health and burden issues of African-American and European-American caregivers of the impaired elderly population in America.

During her graduate career, she was awarded a McKnight Doctoral Fellowship and an American Nurses Association Ethnic/Racial Minority Fellowship. She completed her doctoral studies and is currently an assistant professor in the Department of Sociology and Anthropology at Florida International University in Miami, Florida.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Gary R. Lee, Chairperson
Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Lee A. Crandall, Cochairperson
Associate Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Leonard Beeghley
Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Constance Shehan
Associate Professor of Sociology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Anthony Greene
Assistant Professor of
Psychology

This dissertation was submitted to the Graduate Faculty of the Department of Sociology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dean, Graduate School

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